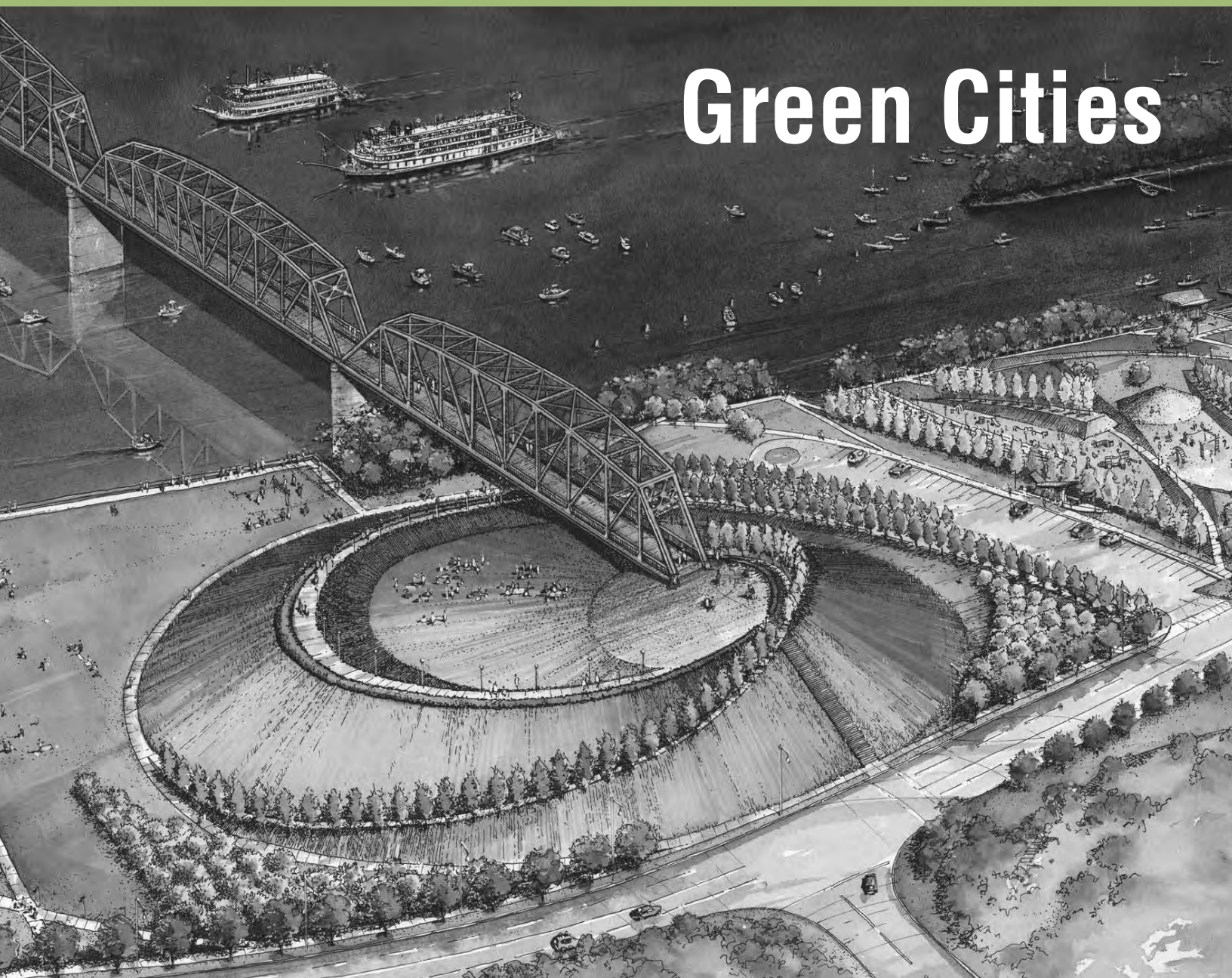
sustain

a journal of environmental and sustainability issues

Issue 12
Spring/Summer 2005

The
Kentucky Institute
for the
Environment
and Sustainable
Development



Green Cities

The Kentucky Institute for the Environment and Sustainable Development (KIESD) was created in July 1992 within the Office of the Vice President for Research, University of Louisville. The Institute provides a forum to conduct interdisciplinary research, applied scholarly analysis, pubic service and educational outreach on environmental and sustainable development issues at the local, state, national and international levels.

KIESD is comprised of eight thematic program centers: Environmental Education, Watershed Research, Sustainable Urban Neighborhoods, Pollution Prevention, Environmental and Occupational Health Sciences, Environmental Policy and Management, and Environmental Engineering.

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Cover Photo: Architect's drawing of bicycle and walking path across the Ohio River on the Big Four Railroad Bridge. *Courtesy, Waterfront Development Corporation*

UNIVERSITY of LOUISVILLE
dare to be great

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Green Cities

To most of us, the term "green cities" is an oxymoron. The word "city" conjures up images of smog, traffic congestion and gridlock, contaminated land and litter, decaying and abandoned buildings, concrete, crime, and poverty. By contrast, the word "suburb" is associated with open spaces, stately homes, green lawns, litter free, spacious parks, tree-lined streets, and lily-padded ponds. The images are vivid and the contrasts are sharp. But a subtle reversal has begun to occur in the United States. As more and more people have spilled out into the suburbs, they have begun to experience the very conditions they moved to the suburbs to escape: gridlock, crime, pollution and a rapidly increasing cost of living.

As the once forgotten core areas of cities have begun to regentrify, urban areas have suddenly become more desirable primarily because they are more livable. Ironically, property that was condemned and stripped clean of houses and businesses and sat vacant for years is now some of the most valuable real estate in the country. Parks and green spaces abound, mass transit, hiking trails and bike paths crisscross the landscape, and restaurants, medical facilities, art museums, concerts, recreation, and other entertainment venues are easily accessible. Major natural resources like rivers and streams, vacant lots once used as open dumping grounds , wetlands and terrain not suitable for development due to severe slope or unstable soils are becoming the central focus for their beauty and use as green space.

This issue of Sustain *highlights some of the leading efforts around the U.S. to create sustainable green cities and the impacts these efforts have on the people who live there. As the authors make clear, the concept of "green cities" is evolving as more cities engage in the process. As the costs of energy rise and the health and environmental consequences of fossil fuels become known, more and more cities are paying attention to clean air; as landfill space becomes scarce, the value of recycled materials is increasing prompting municipalities to capture and sell reusable materials on the expanding market for them; and as streams and rivers reach pollution levels that no longer support aquatic life and threaten human health, efforts are increasing to preserve wetlands and bring once pristine rivers and streams back to their previous natural states. Since over 50% of the world's population now lives in cities, the time to take the concept of "green cities" seriously has arrived. Cities that once competed for manufacturing jobs, and more recently have competed for service sector jobs, now find themselves competing for intellectual capital. Previously manufacturers located in areas where raw materials were available, and service sector positions depended on large labor pools, the job market now requires cities to provide communities capable of attracting highly skilled workers from across the U.S. Jobs in the new economy are less dependent on raw materials, workers are attracted by the quality of life available in the community as much as economic opportunities. Cities with higher environmental quality are better able to attract the intellectual capital to compete in the new economy. It is for the economic well being, as much as anything else, that cities have adopted "green" policies and goals.*

Editor

U of L Partnership to Create 'Green' City

by James R. Ramsey
President, University of Louisville

Education, cooperation and planning are key elements of a new plan to protect the local environment. The Partnership for a Green City, which includes the University of Louisville, Metro Louisville government and Jefferson County Public Schools, has already achieved impressive results in the first 6 months since its kickoff in August of 2004. The partnership has identified some of the challenges the city faces regarding the health and education of its children, waste reduction, energy use, natural resource management and creation of a "green" infrastructure, and recommends possible ways to deal with these challenges.

The Partnership for a Green City formed in January 2004 when representatives of U of L, Metro Louisville government and Jefferson County Public Schools met to discuss shared interests and concerns. It builds on efforts already underway at each institution and allows the partners to join forces for new efforts.

Among the key recommendations of the partnership are the following:

- Establishing a task force of operations officers from U of L, Louisville Metro and JCPS to find ways to reduce energy use in a way that leads to budget savings and increased environmental stewardship.
- Combining resources and expertise among the three partners to reduce, reuse and recycle waste ranging from paper, plastic and aluminum cans to obsolete electronics, scrap metal and corrugated cardboard. The group also will investigate ways to reuse construction materials.
- Forming a purchasing consortium among the three partners to buy "green" products and services cost-effectively. End benefits also include health benefits that can occur through the reduction of chemical exposures and reduced risks to students, employees and the general public.
- Giving all public schools access to outdoor classrooms, expanding environmental education for all citizens and bringing Louisville Metro government into the existing U of L/JCPS Centers for Environmental Education. Studies show that student performance in reading, writing, mathematics, science and social sciences improves when educators use the environment as an integrating context for learning. Outdoor classrooms motivate young people to learn and provide hands-on experiences grounded in real-life learning.
- Conducting regular green issues orientations and professional development for employees. Support and participation of the employees of each partner organization is crucial for the creation of a green city.

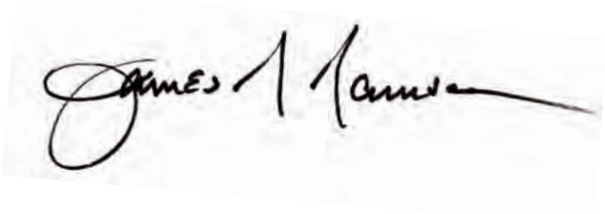
As I said earlier, one critical aspect of this project is that we will share information in a way it has never been shared before. We will trade ideas on how to save energy, how to recycle effectively and how to improve public health and environmental education. We will seek new methods of preventing pollution, and we will develop systems to ensure that the way we buy things reduces waste and protects the environment.

According to Russ Barnett of UofL's Kentucky Institute for the Environment and Sustainable Development, "the partnership, which includes about 26,000 employees, 500 buildings, 7,000 vehicles, 25,000 acres of land and 120,000 students, has the clout to bring about substantial changes." The partnership was paid for by a $51,000 U.S. Department of Education grant.

In addition to the Kentucky Institute for the Environment and Sustainable Development, other U of L units participating in the partnership are:

Schools and Colleges of Education and Human Development, Medicine, Public Health and Information Sciences ; Departments of Biology; Civil and Environmental Engineering, Environmental and Occupational Health Science, Psychological and Brain Sciences, Epidemiology, Pediatrics, Pharmacology and Toxicology, Mathematics, Geography; Justice Administration; Centers for Childhood Research; Environmental Policy and Management; Kentucky Pollution Prevention, Sustainable Urban Neighborhoods;, and, Offices of Environmental Health and Safety, Business Affairs, Research,, Physical Plant; Planning, Design and Construction.

I am strongly committed to establishing strong partnerships in the community and the state, and the Partnership for a Green City is evidence of that commitment. In addition to the many environmental initiatives the three partners are already involved in, the Green Cities Partnership builds capacity to make great strides to improve the quality of life for all of our citizens.



The Greening of Metro Louisville

By Mayor Jerry E. Abramson
Louisville Metro

When our citizens gave the green light to merging our city and county governments back in 2000, the green environmental movement was probably not first in their minds.

But their vote laid the groundwork for a greener Louisville Metro in several ways.

The top goals for merger were to create a new government that would be more efficient and effective - and bring together our 700,000 residents to work on our community's most ambitious challenges.

For the first time, we promised in our Unity campaign, we would be able to plan as one community - with one strong vision -- and form partnerships to address issues from raising educational achievement to strengthening neighborhoods.

Since our new city was born in 2003, we've begun to do just that.

The Partnership for a Green City is a perfect example of a new initiative that has made the most of having one local government that can say "yes" to new policies and practices and also team up with important players in the community - in this case, the community's public school system and largest university.

The Partnership for a Green City has made a strong start in its first 6 months of life. With all three partners working together—the city, Jefferson County Public Schools and University of Louisville—we have focused on:

- Increasing citizen awareness of the environmental impact of their personal decisions;
- Conserving energy and saving taxpayer dollars;
- Increasing recycling; and...
- Involving young and old in learning about their natural surroundings.

Projects in partnership

Here are several specific examples. We have:

- Organized a building audit program using several buildings from Louisville Metro government, our public schools and U of L.
- Acquired more than $180,000 in energy conservation grants, plus the promise of $1.2 million more aimed at active solar energy projects.
- Organized joint purchasing of office paper with sample bid packages
- Planned a vendor fair, field tests and training on green custodial projects
- Coordinated a half-day workshop on procurement of bio-based and Energy Star products
- Launched initiatives to use GIS mapping to create inventories of trees throughout our community.
- Expanded U of L's student recycling program to include glass and aluminum from student dorms and conducted a public school contest to increase recycling and decrease waste.

Building awareness

From my perspective, one important impact of our Partnership will be building an informed and aware community over time—residents who understand the need to walk, not drive, when they have a few neighborhood errands to run, for example—or recognize the advantages of reducing pollution from gas-powered lawn mowers by planting a front yard filled with flowers and shrubs, not grass.

With awareness, you create community support for programs like Louisville's new initiative to monitor and reduce toxic air emissions from local industries, a program that has already won national praise for the Louisville Metro Air Pollution Control District.

The potential payoff is huge—fitness and satisfaction, in the case of the walk, and, in the case of improving air quality, a community that can be more competitive in the long run by improving quality of life for its residents.

A "greener" city will be a place where young people choose to make their homes and raise their families - and a desirable location for companies that use quality of life as a yardstick when they decide where to set up their headquarters.

Our Green Partnership goes hand-in-hand with other initiatives. We recently announced plans to become a City of Parks, adding at least 2,000 acres of parkland over the next 10 years to our current 14,000 acres. We have also launched a 5-year plan to become more bike-friendly by adding bicycle routes and increasing safety.

Taken together, this work will help Louisville compete with cities like Austin, Portland, and Minneapolis....and give us an edge over competing cities such as Nashville, Indianapolis, Cincinnati, Jacksonville, Dayton and Memphis.

A greener community will surely lead to an even greater hometown.

Color Us Green

By Stephen W. Daeschner, Ph.D.,
Superintendent, Jefferson County Public Schools, Louisville, Kentucky

Kermit the Frog (one of my favorite Muppets) often opined that it's not easy being green. Perhaps Kermit could have used a little help from his friends. We in the Jefferson County Public Schools (JCPS) are delighted to have the assistance of two steadfast partners, The University of Louisville and Louisville Metro Government, as we try to make our school and community environments a little "greener" for everyone.

Combined, our institutions represent some 25,900 employees, more than 500 buildings, 7,000 vehicles, 25,000 acres of land, and 120,000 students. There is power in these numbers, and we intend to work together to channel that power for the benefit of all our community's citizens.

In August 2004, we kicked off the initiative with our joint announcement about the Partnership for a Green City. This partnership has three major prongs: environmental education, environmental management, and environmental health. Here are some of the things we are doing in each of these arenas.

Our district has a long history of supporting environmental education, with the most obvious indicator being our 25-year partnership with the Blackacre State Nature Preserve, now reinforced by a new ten-year Memorandum of Agreement. However, there are many ways beyond the occasional field trip to effectively incorporate environmental education into the classroom. Many schools have established outdoor classrooms on their own campuses. Others are just a short walk away from a local park or garden. Learning about the world around us need not be a hit-and-miss curricular add-on. Rather, our environment should be appreciated for providing a real-world opportunity to apply skills and knowledge in authentic settings. One goal of the Partnership is to have schools "adopt" nearby parks and to work with park managers to plan education/conservation activities.

This year, elementary teachers have had a new tool to help them integrate environmental education into their core content. The JCPS Environmental Education Elementary Curriculum Map provides week-by-week suggestions for each grade level on ways that environmental education can be woven into each subject area in a manner that reinforces the development of key skills and knowledge. At the middle school level, Meyzeek and Farnsley have been selected through a Pew foundation initiative to become statewide models in the use of the environment as a basis for interdisciplinary instruction.

The second component of our Green City partnership, environmental management, is a no-brainer. Our district spends over $16 million annually on energy, and those costs keep rising for us as they do for homeowners. Every dollar we can save on electricity, for example, is a dollar we can put toward additional student services or better employee compensation. While it would be nice if everyone tried to save energy for purely altruistic reasons, it's certainly appropriate to make the effort in your own self-interest. So, every time you flip that light switch as you leave a room, think of it as adding a couple pennies to next year's pay raise.

We must help everyone understand that turning off all computers at the end of the day will leave more money for library books and after-school activities. Make it a class project to uncover dozens of ways to save energy in the classroom and throughout the school (report dripping faucets, open the blinds and turn off lights on sunny days, unplug room refrigerators and heaters, turn on only every other light in the hallways, recycle paper and print on both sides, turn off the lights in vending machines). It's never too soon to encourage students to develop the energy-saving habits that will affect their future quality of life.

The third component of our initiative, environmental health, is admittedly complex but is slowly getting underway. Along with our partners, we are investigating the impact of asthma on student and employee attendance. If, as we believe, chronic asthma is a prime contributor to absenteeism, we all have a stake in finding ways to improve our region's air quality.

By joining forces with our partners, we in JCPS can have a positive impact on our community's way of life. Environmental problems are solvable, and we can alter our behaviors without lowering our standard of living. We recognize intuitively that green cities are more attractive to people and supportive of families.

On Friday, April 22, we celebrated Earth Day. This occasion gave us an excellent opportunity to support the progress being made by the Partnership for a Green City. But we can make every day Earth Day. You can take a walk and explore a new neighborhood. While you're at it, carry a plastic bag with you and fill it with litter that you pick up along the way. Send an e-mail to your Metro Council representative advocating more sidewalks and bike paths. "Moi?" as Miss Piggy often queried. Yes, you and I. It's our environment … our city. We need to be at least as concerned about the level of "green" in our landscapes as we are about the amount of "green" in our wallets. It makes no difference whether our political leaning or our sports affiliation is red or blue, we all need to work together to make Louisville green for future generations.

Stephen Daeschner

Green Manhattan
Why New York is the greenest city in the U.S.

By David Owen
Published in The New Yorker (October. 18, 2004)

My wife and I got married right out of college, in 1978. We were young and naïve and unashamedly idealistic, and we decided to make our first home in a utopian environmentalist community in New York State. For seven years, we lived, quite contentedly, in circumstances that would strike most Americans as austere in the extreme: our living space measured just seven hundred square feet, and we didn't have a dishwasher, a garbage disposal, a lawn, or a car. We did our grocery shopping on foot, and when we needed to travel longer distances we used public transportation. Because space at home was scarce, we seldom acquired new possessions of significant size. Our electric bills worked out to about a dollar a day.

New York City skyline

The utopian community was Manhattan. (Our apartment was on Sixty-ninth Street, between Second and Third.) Most Americans, including most New Yorkers, think of New York City as an ecological nightmare, a wasteland of concrete and garbage and diesel fumes and traffic jams, but in comparison with the rest of America it's a model of environmental responsibility. By the most significant measures, New York is the greenest community in the United States, and one of the greenest cities in the world. The most devastating damage humans have done to the environment has arisen from the heedless burning of fossil fuels, a category in which New Yorkers are practically prehistoric. The average Manhattanite consumes gasoline at a rate that the country as a whole hasn't matched since the mid-nineteen-twenties, when the most widely owned car in the United States was the Ford Model T. Eighty-two per cent of Manhattan residents travel to work by public transit, by bicycle, or on foot. That's ten times the rate for Americans in general, and eight times the rate for residents of Los Angeles County. New York City is more populous than all but eleven states; if it were granted statehood, it would rank fifty-first in per-capita energy use.

"Anyplace that has such tall buildings and heavy traffic is obviously an environmental disaster—except that it isn't," John Holtzclaw, a transportation consultant for the Sierra Club and the Natural Resources Defense Council, told me. "If New Yorkers lived at the typical American sprawl density of three households per residential acre, they would require many times as much land. They'd be driving cars, and they'd have huge lawns and be using pesticides and fertilizers on them, and then they'd be overwatering their lawns, so that runoff would go into streams." The key to New York's relative environmental benignity is its extreme compactness. Manhattan's population density is more than eight hundred times that of the nation as a whole. Placing one and a half million people on a twenty-three-square-mile island sharply reduces their opportunities to be wasteful, and forces the majority to live in some of the most inherently energy-efficient residential structures in the world: apartment buildings. It also frees huge tracts of land for the rest of America to sprawl into.

My wife and I had our first child in 1984. We had both grown up in suburbs, and we decided that we didn't want to raise our tiny daughter in a huge city. Shortly after she learned to walk, we moved to a small town in northwestern Connecticut, about ninety miles north of midtown Manhattan. Our house, which was built in the late seventeen-hundreds, is across a dirt road from a nature preserve and is shaded by tall white-pine trees. After big rains, we can hear a swollen creek rushing by at the bottom of the hill. Deer, wild turkeys, and the occasional black bear feed themselves in our yard. From the end of our driveway, I can walk several miles through woods to an abandoned nineteenth-century railway tunnel, while crossing only one paved road.

Yet our move was an ecological catastrophe. Our consumption of electricity went from roughly four thousand kilowatt-hours a year, toward the end of our time in New York, to almost thirty thousand kilowatt-hours in 2003—and our house doesn't even have central air-conditioning. We bought a car shortly before we moved, and another one soon after we arrived, and a third one ten years later. (If you live in the country and don't have a second car, you can't retrieve your first car from the mechanic after it's been repaired; the third car was the product of a mild midlife crisis, but soon evolved into a necessity.) My wife and I both work at home, but we manage to drive thirty thousand miles a year between us, mostly doing ordinary errands. Nearly everything we do away from our house requires a car trip. Renting a movie and later returning it, for example, consumes almost two gallons of gasoline, since the nearest Blockbuster is ten miles away and each transaction involves two round trips. When we lived in New York, heat escaping from our apartment helped to heat the apartment above ours; nowadays, many of the Btus produced by our brand-new, extremely efficient oil-burning furnace leak through our two-hundred-year-old roof and into the dazzling star-filled winter sky above.

When most Americans think about environmentalism, they picture wild, unspoiled landscapes—the earth before it was transmogrified by human habitation. New York City is one of the most thoroughly altered landscapes imaginable, an almost wholly artificial environment, in which the terrain's primeval contours have long since been obliterated and most of the parts that resemble nature (the trees on side streets, the rocks in Central Park) are essentially decorations. Ecology-minded discussions of New York City often have a hopeless tone, and focus on ways in which the city might be made to seem somewhat less oppressively man-made: by increasing the area devoted to parks and greenery, by incorporating vegetation into buildings themselves, by reducing traffic congestion, by easing the intensity of development, by creating open space around structures. But most such changes would actually undermine the city's extraordinary energy efficiency, which arises from the characteristics that make it surreally synthetic.

Because densely populated urban centers concentrate human activity, we think of them as pollution crisis zones. Calculated by the square foot, New York City generates more greenhouse gases, uses more energy, and produces more solid waste than most other American regions of comparable size. On a map depicting negative environmental impacts in relation to surface area, therefore, Manhattan would look like an intense hot spot, surrounded, at varying distances, by belts of deepening green.

If you plotted the same negative impacts by resident or by household, however, the color scheme would be reversed. My little town has about four thousand residents, spread over 38.7 thickly wooded square miles, and there are many places within our town limits from which no sign of settlement is visible in any direction. But if you moved eight million people like us, along with our dwellings and possessions and current rates of energy use, into a space the size of New York City, our profligacy would be impossible to miss, because you'd have to stack our houses and cars and garages and lawn tractors and swimming pools and septic tanks higher than skyscrapers. (Conversely, if you made all eight million New Yorkers live at the density of my town, they would require a space equivalent to the land area of the six New England states plus Delaware and New Jersey.) Spreading people out increases the damage they do to the environment, while making the problems harder to see and to address.

Of course, living in densely populated urban centers has many drawbacks. Even wealthy New Yorkers live in spaces that would seem cramped to Americans living almost anywhere else. A well-to-do friend of mine who grew up in a town house in Greenwich Village thought of his upbringing as privileged until, in prep school, he visited a classmate from the suburbs and was staggered by the house, the lawn, the cars, and the swimming pool, and thought, with despair, You mean I could live like this? Manhattan is loud and dirty, and the subway is depressing, and the fumes from the cars and cabs and buses can make people sick. Presumably for environmental reasons, New York City has one of the highest childhood-asthma rates in the country, with an especially alarming concentration in East Harlem.

Nevertheless, barring an almost inconceivable reduction in the earth's population, dense urban centers offer one of the few plausible remedies for some of the world's most discouraging environmental ills. To borrow a term from the jargon of computer systems, dense cities are scalable, while sprawling suburbs are not. The environmental challenge we face, at the current stage of our assault on the world's non-renewable resources, is not how to make our teeming cities more like the pristine countryside. The true challenge is how to make other settled places more like Manhattan. This notion has yet to be widely embraced, partly because it is counterintuitive, and partly because most Americans, including most environmentalists, tend to view cities the way Thomas Jefferson did, as "pestilential to the morals, the health, and the liberties of man." New York is the place that's fun to visit but you wouldn't want to live there. What could it possibly teach anyone about being green?

New York's example, admittedly, is difficult for others to imitate, because the city's remarkable population density is the result not of conscientious planning but of a succession of serendipitous historical accidents. The most important of those accidents was geographic: New York arose on a smallish island rather than on the mainland edge of a river or a bay, and the surrounding water served as a physical constraint to outward expansion. Manhattan is like a typical seaport turned inside out—a city with a harbor around it, rather than a har-

bor with a city along its edge. Insularity gave Manhattan more shoreline per square mile than other ports, a major advantage in the days when one of the world's main commercial activities was moving cargoes between ships. It also drove early development inward and upward.

A second lucky accident was that Manhattan's street plan was created by merchants who were more interested in economic efficiency than in boulevards, parks, or empty spaces between buildings. The resulting crush of architecture is actually humanizing, because it brings the city's commercial, cultural, and other offerings closer together, thereby increasing their accessibility—a point made forty-three years ago by the brilliantly iconoclastic urban thinker Jane Jacobs, in her landmark book "The Death and Life of Great American Cities."

A third accident was the fact that by the early nineteenhundreds most of Manhattan's lines had been filled in to the point where not even Robert Moses could easily redraw them to accommodate the great destroyer of American urban life, the automobile. Henry Ford thought of cars as tools for liberating humanity from the wretchedness of cities, which he viewed with as much distaste as Jefferson did. In 1932, John Nolen, a prominent Harvard-educated urban planner and landscape architect, said, "The future city will be spread out, it will be regional, it will be the natural product of the automobile, the good road, electricity, the telephone, and the radio, combined with the growing desire to live a more natural, biological life under pleasanter and more natural conditions." This is the idea behind suburbs, and it's still seductive. But it's also a prescription for sprawl and expressways and tremendous waste.

New York City's obvious urban antithesis, in terms of density and automobile use, is metropolitan Los Angeles, whose metastatic outward growth has been virtually unimpeded by the lay of the land, whose early settlers came to the area partly out of a desire to create space between themselves and others, and whose main development began late enough to be shaped by the needs of cars. But a more telling counterexample is Washington, D.C., whose basic layout was conceived at roughly the same time as Manhattan's, around the turn of the nineteenth century. The District of Columbia's original plan was created by an eccentric French-born engineer and architect named Pierre-Charles L'Enfant, who befriended General Washington during the Revolutionary War and asked to be allowed to design the capital. Many of modern Washington's most striking features are his: the broad, radial avenues; the hublike traffic circles; the sweeping public lawns and ceremonial spaces.

Construction at sunset

Washington is commonly viewed as the most intelligently beautiful—the most European—of large American cities. Ecologically, though, it's a mess. L'Enfant's expansive avenues were easily adapted to automobiles, and the low, widely separated buildings (whose height is limited by law) stretched the distance between destinations. There are many pleasant places in Washington to go for a walk, but the city is difficult to get around on foot: the wide avenues are hard to cross, the traffic circles are like obstacle courses, and the grandiloquent empty spaces thwart pedestrians, by acting as what Jane Jacobs calls "border vacuums." (One of Jacobs's many arresting observations is that parks and other open spaces can reduce urban vitality, by creating dead ends that prevent people from moving freely between neighborhoods and by decreasing activity along their edges.) Many parts of Washington, furthermore, are relentlessly homogeneous. There are plenty of dignified public buildings on Constitution Avenue, for example, but good luck finding a dry cleaner, a Chinese restaurant, or a grocery store. The city's horizontal, airy design has also pushed development into the surrounding countryside. The fastest-growing county in the United States is Loudoun County, Virginia, at the rapidly receding western edge of the Washington metropolitan area.

The Sierra Club, an environmental organization that advocates the preservation of wilderness and wildlife, has a national campaign called Challenge to Sprawl. The aim of the program is to arrest the mindless conversion of undeveloped countryside into subdivisions, strip malls, and S.U.V.-clogged expressways. The Sierra Club's Web site features a slide-show-like demonstration that illustrates how various sprawling suburban intersections could be transformed into far more appealing and energy-efficient developments by implementing a few modifications, among them widening the sidewalks and narrowing the streets, mixing residential and commercial uses, moving buildings closer together and closer to the edges of sidewalks (to make them more accessible to pedestrians and to increase local density), and adding public transportation—all fundamental elements of the widely touted anti-sprawl strategy known as Smart Growth. In a recent telephone conversation with a Sierra Club representative involved in Challenge to Sprawl, I said that the organization's anti-sprawl suggestions and the modified streetscapes in the slide show shared many significant fea-

tures with Manhattan—whose most salient characteristics include wide sidewalks, narrow streets, mixed uses, densely packed buildings, and an extensive network of subways and buses. The representative hesitated, then said that I was essentially correct, although he would prefer that the program not be described in such terms, since emulating New York City would not be considered an appealing goal by most of the people whom the Sierra Club is trying to persuade.

An obvious way to reduce consumption of fossil fuels is to shift more people out of cars and into public transit. In many parts of the country, though, public transit has been stagnant or in decline for years. New York City's Metropolitan Transportation Authority and Department of Transportation account for nearly a third of all the transit passenger miles travelled in the United States and for nearly four times as many passenger miles as the Washington Metropolitan Area Transit Authority and the Los Angeles County Metropolitan Trans-portation Authority combined.

Stock Exchange

New York City looks so little like other parts of America that urban planners and environmentalists tend to treat it as an exception rather than an example, and to act as though Manhattan occupied an idiosyncratic universe of its own. But the underlying principles apply everywhere. "The basic point," Jeffrey Zupan, an economist with the Regional Planning Association, told me, "is that you need density to support public transit. In all cities, not just in New York, once you get above a certain density two things happen. First, you get less travel by mechanical means, which is another way of saying you get more people walking or biking; and, second, you get a decrease in the trips by auto and an increase in the trips by transit. That threshold tends to be around seven dwellings per acre. Once you cross that line, a bus company can put buses out there, because they know they're going to have enough passengers to support a reasonable frequency of service."

Phoenix is the sixth-largest city in the United States and one of the fastest-growing among the top ten, yet its public transit system accounts for just one per cent of the passenger miles that New York City's does. The reason is that Phoenix's burgeoning population has spread so far across the desert—greater Phoenix, whose population is a little more than twice that of Manhattan, covers more than two hundred times as much land—that no transit system could conceivably serve it. And no amount of browbeating, public-service advertising, or federal spending can change that.

Cities, states, and the federal government often negate their own efforts to nurture public transit by simultaneously spending huge sums to make it easier for people to get around in cars. When a city's automobile traffic becomes congested, the standard response has long been to provide additional capacity by building new roads or widening existing ones. This approach eventually makes the original problem worse, by generating what transportation planners call "induced traffic": every mile of new highway lures passengers from public transit and other more efficient modes of travel, and makes it possible for residential and commercial development to spread even farther from urban centers. And adding public transit in the hope of reducing automobile congestion is as self-defeating as building new highways, because unclogging roads, if successful, just makes driving seem more attractive, and the roads fill up again. A better strategy would be to eliminate existing traffic lanes and parking spaces gradually, thereby forcing more drivers to use less environmentally damaging alternatives—in effect, "induced transit." One reason New Yorkers are the most dedicated transit users in America is that congestion on the city's streets makes driving extraordinarily disagreeable. The average speed of crosstown traffic in Manhattan is little more than that of a brisk walker, and in midtown at certain times of the day the cars on the side streets move so slowly that they appear almost to be parked. Congestion like that urges drivers into the subways, and it makes life easier for pedestrians and bicycle riders by slowing cars to a point where they constitute less of a physical threat.

Even in New York City, the relationship between traffic and transit is not well understood. A number of the city's most popular recent transportation-related projects and policy decisions may in the long run make the city a worse place to live in by luring passengers back into their cars and away from public transportation: the rebuilding and widening of the West Side Highway, the implementation of EZ-Pass on

the city's toll bridges, the decision not to impose tolls on the East River bridges, and the current renovation of the F.D.R. Drive (along with the federally funded hundred-and-thirty-nine-million-dollar Outboard Detour Roadway, which is intended to prevent users of the F.D.R. from being inconvenienced while the work is under way).

Public transit itself can be bad for the environment if it facilitates rather than discourages sprawl. The Washington Metropolitan Area Transit Authority is considering extensions to some of the most distant branches of its system, and those extensions, if built, will allow people to live even farther from the city's center, creating new, non-dense suburbs where all other travel will be by automobile, much of it to malls and schools and gas stations that will be built to accommodate them. Transit is best for the environment when it helps to concentrate people in dense urban cores. Building the proposed Second Avenue subway line would be environmentally sound, because it would increase New Yorkers' ability to live without cars; building a bullet train between Penn Station and the Catskills (for example) would not be sound, because it would enable the vast, fuel-squandering apparatus of suburbia to establish itself in a region that couldn't support it otherwise.

On the afternoon of August 14, 2003, I was working in my office, on the third floor of my house, when the lights blinked, my window air-conditioner sputtered, and my computer's backup battery kicked in briefly. This was the beginning of the great blackout of 2003, which halted electric service in parts of eight Northeastern and Midwestern states and in southeastern Canada. The immediate cause was eventually traced to Ohio, but public attention often focussed on New York City, which had the largest concentration of affected power customers. Richard B. Miller, who resigned as the senior energy adviser for the city of New York six weeks before the blackout, reportedly over deep disagreements with the city's energy policy, told me, "When I was with the city, I attended a conference on global warming where somebody said, 'We really need to raise energy and electricity prices in New York City, so that people will consume less.' And my response at that conference was 'You know, if you're talking about raising energy prices in New York City only, then you're talking about something that's really bad for the environment. If you make energy prices so expensive in the city that a business relocates from Manhattan to New Jersey, what you're really talking about, in the simplest terms, is a business that's moving from a subway stop to a parking lot. And which of those do you think is worse for the environment?' "

People who live in cities use only about half as much electricity as people who don't, and people who live in New York City generally use less than the urban average. A truly enlightened energy policy would reward city dwellers and encourage others to follow their good example. Yet New York City residents pay more per kilowatt-hour than almost any other American electricity customers; taxes and other government charges, most of which are not enumerated on electricity bills, can constitute close to twenty per cent of the cost of power for residential and commercial users in New York. Richard Miller, after leaving his job with New York City, went to work as a lawyer in Consolidated Edison's regulatory affairs department, spurred by his thinking about the environment. He believes that state and local officials have historically taken unfair advantage of the fact that there is no political cost to attacking a big utility. Con Ed pays more than six hundred million dollars a year in property taxes, making it by far the city's largest property-tax payer, and those charges inflate electric bills. Meanwhile, the cost of driving is kept artificially low. (Fifth Avenue and the West Side Highway don't pay property taxes, for example.) "In addition," Miller said, "the burden of improving the city's air has fallen far more heavily on power plants, which contribute only a small percentage of New York City's air pollution, than it has on cars—even though motor vehicles are a much bigger source."

Last year, the National Building Museum, in Washington, D.C., held a show called "Big & Green: Toward Sustainable Architecture in the 21st Century." A book of the same name was published in conjunction with the show, and on the book's dust jacket was a photograph of 4 Times Square, also known as the Condé Nast Building, a forty-eight-story glass-and-steel tower between Forty-second and Forty-third Streets, a few blocks west of Grand Central Terminal. (The New Yorker's offices occupy two floors in the building.) When 4 Times Square was built, in 1999, it was considered a major breakthrough in urban development. As Daniel Kaplan, a principal of Fox & Fowle Architects, the firm that designed it, wrote in an article in Environmental Design & Construction in 1997, "When thinking of green architecture, one usually associates smaller scale," and he cited as an example the headquarters of the Rocky Mountain Institute, a nonprofit environmental research and consulting firm based in Snowmass, Colorado. The R.M.I. building is a four-thousand-square-foot, superinsulated, passive-solar structure with curving sixteen-inch-thick walls, set into a hillside about fifteen miles north of Aspen. It was erected in the early eighties and serves partly as a showcase for green construction technology. (It is also the home of Amory Lovins, who is R.M.I.'s co-founder and chief executive officer.) R.M.I. contributed to the design of 4 Times Square, which has many innovative features, among them collection chutes for recyclable materials, photovoltaic panels incorporated into parts of its skin, and curtain-wall construction with exceptional shading and insulating properties.

These are all important innovations. In terms of the building's true ecological impact, though, they are distinctly secondary. (The power generated by the photovoltaic panels supplies less than one per cent of the building's require-

ments.) The two greenest features of 4 Times Square are ones that most people never even mention: it is big, and it is situated in Manhattan.

Environmentalists have tended to treat big buildings as intrinsically wasteful, because large amounts of energy are expended in their construction, and because the buildings place intensely localized stresses on sewers, power lines, and water systems. But density can create the same kinds of ecological benefits in individual structures that it does in entire communities. Tall buildings have much less exposed exterior surface per square foot of interior space than smaller buildings do, and that means they present relatively less of themselves to the elements, and their small roofs absorb less heat from the sun during cooling season and radiate less heat from inside during heating season. (The beneficial effects are greater still in Manhattan, where one building often directly abuts another.) A study by Michael Phillips and Robert Gnaizda, published in CoEvolution Quarterly in 1980, found that an ordinary apartment in a typical building near downtown San Francisco used just a fifth as much heating fuel as a new tract house in Davis, a little more than seventy miles away. Occupants of tall buildings also do a significant part of their daily coming and going in elevators, which, because they are counterweighted and thus require less motor horsepower, are among the most energy-efficient passenger vehicles in the world.

Bruce Fowle, a founder of Fox & Fowle, told me, "The Condé Nast Building contains 1.6 million square feet of floor space, and it sits on one acre of land. If you divided it into forty-eight one-story suburban office buildings, each averaging thirty-three thousand square feet, and spread those one-story buildings around the countryside, and then added parking and some green space around each one, you'd end up consuming at least a hundred and fifty acres of land. And then you'd have to provide infrastructure, the highways and everything else." Like many other buildings in Manhattan, 4 Times Square doesn't even have a parking lot, because the vast majority of the six thousand people who work inside it don't need one. In most other parts of the country, big parking lots are not only necessary but are required by law. If my town's zoning regulations applied in Manhattan, 4 Times Square would have needed sixteen thousand parking spaces, one for every hundred square feet of office floor space. The Rocky Mountain Institute's showcase headquarters has double-paned krypton-filled windows, which admit seventy-five per cent as much light as ordinary windows while allowing just ten per cent as much heat to escape in cold weather. That's a wonderful feature, and one of many in the building which people ought to copy. In other ways, though, the R.M.I. building sets a very poor environmental example. It was built in a fragile location, on virgin land more than seven thousand feet above sea level. With just four thousand square feet of interior space, it can hold only six of R.M.I.'s eight-

Highrise at nite

een full-time employees; the rest of them work in a larger building a mile away. Because the two buildings are in a thinly populated area, they force most employees to drive many miles—including trips between the two buildings—and they necessitate extra fuel consumption by delivery trucks, snowplows, and other vehicles. If R.M.I.'s employees worked on a single floor of a big building in Manhattan (or in downtown Denver) and lived in apartments nearby, many of them would be able to give up their cars, and the thousands of visitors who drive to Snowmass each year to learn about environmentally responsible construction could travel by public transit instead.

Picking on R.M.I.—which is one of the world's most farsighted environmental organizations—may seem unfair, but R.M.I., along with many other farsighted environmental organizations, shares responsibility for perpetuating the powerful anti-city bias of American environmentalism. That bias is evident in the technical term that is widely used for sprawl: "urbanization." Thinking of freeways and strip malls as "urban" phenomena obscures the ecologically monumental difference between Phoenix and Manhattan, and fortifies the perception that population density is an environmental ill. It also prevents most people from recognizing that R.M.I.'s famous headquarters—which sits on an isolated parcel more than a hundred and eighty miles from the nearest significant public transit system—is sprawl.

When I told a friend recently that I thought New York City should be considered the greenest community in America, she looked puzzled, then asked, "Is it because they've started recycling again?" Her question reflected a central failure of the American environmental movement: that too many of us have been made to believe that the mostimportant thing we can do to save the earth and ourselves is to remember each week to set our cans and bottles and newspapers on the curb. Recycling is popular because it enables people to relieve their gathering anxieties about the future without altering the way they live. But most current recycling has, at best, a neutral effect on the environment, and much of it is demonstrably

harmful. As William McDonough and Michael Braungart point out in "Cradle to Cradle: Remaking the Way We Make Things," most of the materials we place on our curbs are merely "downcycled"—converted to a lower use, providing a pause in their inevitable journey to a landfill or an incinerator—often with a release of toxins and a net loss of fuel, among other undesirable effects.

By far the worst damage we Americans do to the planet arises not from the newspapers we throw away but from the eight hundred and fifty million or so gallons of oil we consume every day. We all know this at some level, yet we live like alcoholics in denial. How else can we explain that our cars have grown bigger, heavier, and less fuel-efficient at the same time that scientists have become more certain and more specific about the consequences of our addiction to gasoline?

Statue of Liberty

On a shelf in my office is a small pile of recent books about the environment which I plan to reread obsessively if I'm found to have a terminal illness, because they're so unsettling that they may make me less upset about being snatched from life in my prime. At the top of the pile is "Out of Gas: The End of the Age of Oil," by David Goodstein, a professor at the California Institute of Technology, which was published earlier this year. "The world will soon start to run out of conventionally produced, cheap oil," Goodstein begins. In succeeding pages, he lucidly explains that humans have consumed almost a trillion barrels of oil (that's forty-two trillion gallons), or about half of the earth's total supply; that a devastating global petroleum crisis will begin not when we have pumped the last barrel out of the ground but when we have reached the halfway point, because at that moment, for the first time in history, the line representing supply will fall through the line representing demand; that we will probably pass that point within the current decade, if we haven't passed it already; that various well-established laws of economics are about to assert themselves, with disastrous repercussions for almost everything; and that "civilization as we know it will come to an end sometime in this century unless we can find a way to live without fossil fuels."

Standing between us and any conceivable solution to our energy nightmare are our cars and the asphalt-latticed country we have built to oblige them. Those cars have defined our culture and our lives. A car is speed and sex and power and emancipation. It makes its driver a self-sufficient nation of one. It is everything a city is not.

Most of the car's most tantalizing charms are illusory, though. By helping us to live at greater distances from one another, driving has undermined the very benefits that it was meant to bestow. Ignacio San Martín, an architecture professor and the head of the graduate urban-design program at the University of Arizona, told me, "If you go out to the streets of Phoenix and are able to see anybody walking—which you likely won't—they are going to tell you that they love living in Phoenix because they have a beautiful house and three cars. In reality, though, once the conversation goes a little bit further, they are going to say that they spend most of their time at home watching TV, because there is absolutely nothing to do." One of the main attractions of moving to the suburbs is acquiring ground of your own, yet you can travel for miles through suburbia and see no one doing anything in a yard other than working on the yard itself (often with the help of a riding lawnmower, one of the few four-wheeled passenger vehicles that gets worse gas mileage than a Hummer). The modern suburban yard is perfectly, perversely self-justifying: its purpose is to be taken care of.

In 1801, in his first Inaugural address, Thomas Jefferson said that the American wilderness would provide growing room for democracy-sustaining agrarian patriots "to the thousandth and thousandth generation." Jefferson didn't foresee the interstate highway system, and his arithmetic was off, in any case, but he nevertheless anticipated (and, in many ways, embodied) the ethos of suburbia, of anti-urbanism, of sprawl. The standard object of the modern American dream, the single-family home surrounded by grass, is a mini-Monticello. It was the car that put it within our reach. But what a terrible price we have paid—and have yet to pay—for our liberation from the city.

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Managing and Reporting Sustainability Progress in City Operations

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In February of 2000 the City Council of Eugene, Oregon adopted Resolution #4618, A Resolution Adopting a Definition and Statement of Intent Regarding the Application of Sustainability Principles to the City of Eugene. www.ci.eugene.or.us/PDD/Sustain/resolution_no_4618.htm

This resolution commits the City to promoting a sustainable future that meets today's needs without compromising the ability of future generations to meet their needs, and accepts its responsibility to:

- ▲ Support a stable, diverse and equitable economy
- ▲ Protect the quality of the air, water, land and other natural resources
- ▲ Conserve native vegetation, fish, wildlife habitat and other ecosystems
- ▲ Minimize human impacts on local, regional and worldwide ecosystems

The resolution also included a set of sustainability principles intended to guide the development of policies and strategies and the provision of City services. This resolution was the political nod to the specialists in the city to go forward and innovate. Since then, there have been many efforts that were documented and reported to the public. (See below - "Public Reporting of Sustainability Performance") A description of our most recent efforts follows:

Greenhouse Gas (GHG) Emissions & Climate Change - The City recently started working with a University of Oregon Planning, Public Policy and Management (PPPM) graduate course to develop a regional baseline of greenhouse gas emissions. As part of establishing this baseline, the City provided 10 years of detailed data on energy and fuel consumption as well as solid waste production of City operations. The graduate students will quantify the City's portion of the local greenhouse gas emissions as well as evaluate alternative ways to reduce GHG emissions. They will follow this by developing a plan for adapting to local consequences of climate change and ultimately a regional climate change plan.

Solid Waste/Recycling - Beginning in January, 2005 the City of Eugene's Solid Waste and Recycling Program implemented a pilot collection program for food discards that were not acceptable for the local food bank. Approximately 1400 collection customers received instructions to recycle food scraps into their yard debris recycling bin. The year long study will evaluate the collection and processing costs and material preparation issues associated with a City-wide collection program for residential customers. Previous work by the Program in the arena of food discard composting has led the Oregon state environmental regulators to re-write their compost facility permitting rules

Beyond our city, our employees are getting the word out in important ways on solid waste reduction. Alex Cuyler, the City of Eugene's Solid Waste and Recycling Analyst is the chair of the Association of Oregon Recyclers, an Oregon trade association that is leading an effort to modernize Oregon's beverage container redemption system.

West Eugene Wetlands - The West Eugene Wetlands Program recently won the prestigious Julian Award for Sustainability from the Oregon Chapter of the American Public Works Association. The partnership program manages land for several threatened and endangered species, including the Fenders blue butterfly, Kincaid's lupine, Willamette Valley Daisy, and Bradshaw's desert parsley. The partnership has successfully acquired nearly 3,000 acres including the recent acquisition of a key parcel connecting the Willow Creek nature preserve owned by The Nature Conservancy with Amazon Creek. The partnership is currently working on plans for an education center that will aspire to achieve a LEED Certification.

Green Fleet - The city's car fleet is currently 19% hybrid vehicles (not counting police vehicles) and growing. We feel this is a solid strategy given the availability of gasoline compared to natural gas etc. For our diesel fleet we are continually increasing our use of "Cleaner" fuels such as bio-diesel(B-20), which began last year. The blend contains 80% regular diesel fuel and 20% bio-diesel. This year's plan includes reducing emissions in diesel operated vehicles by installing retrofit emission control devices and by replacing regular diesel with ultra-low sulfur diesel. The Environmental Protection Agency (EPA) reports that the combined use of B-20, ultra low sulfur diesel and a emission control device can reduce tailpipe emission close to that of a natural gas operated vehicle without any engine modifications.

Getting the cleaner fuel at a lower price traditionally has been tricky due to low volumes and high prices. Because of this, the City partnered in the Lane Clean Diesel- a cooperative purchasing effort designed to aggregate the demand, increase access and lower the price. This project was sponsored by the Lane Regional Air Pollution Authority and included other local public entities and a few private firms. In addition to reaching economies of scale for the city and the other users, the guaranteed volume agreements drove the creation of a bio-diesel production facility in Portland, which will in turn lower the costs and carbon impacts of this alternative fuel.

Wastewater Division's Environmental Management System - The Wastewater Division of the City's Public Works Department established an environmental management system (EMS) in 2001. The objective of the EMS is to clearly identify the operating principles and practices that will be effective at improving the overall environmental benefits from the Division's responsibilities for operating and maintaining the regional wastewater treatment facilities. The system is registered as compliant with the International Standards Organization standard for environmental management systems (ISO 14001). This compliance is evaluated via audits every six months by an independent, external auditor.

In the three and a half years the system has been in place, the Division has realized improvements in its environmental performance, including over a 44% reduction in the use of paper products, an increased use of non-petroleum based fuels using biodiesel 20/80 for all diesel powered equipment and vehicles, a reduction of over 85% for sulfur dioxide emissions from an engine generator, and a reduction in the total amount of solid waste in tons sent to the landfill by 34%. The system has also led to the development of procedures for evaluating and managing in the planning stages the environmental impact of decisions related to wastewater operations and maintenance activities. Although the system is focused on mitigating adverse impacts and improving overall environmental performance, it has established a strong foundation from which to further develop sustainable strategies for operating and managing the regional wastewater program.

Performance Monitoring and Next Steps

The City has long been a leader in measuring performance across its service system. The City is one of a select group of communities awarded a Certificate of Distinction by the International City/County Management Association (ICMA) Center for Performance Measurement for its exceptional use of performance information in the management of local government. The City has a well-developed performance measurement system, collecting data across thirty-eight services, and using it to inform management decisions and report the City's performance to the public. Eugene also benchmarks its performance against more than 100 other jurisdictions through the ICMA's Center for Performance Measurement, and recently received a "Trailblazer" grant from the National Center for Civic Innovation to make its performance information more accessible and useful to the public. It was in the same spirit that the city decided to measure and report it's performance on sustainability issues. In 2004, the city contracted with Good Company, a local research and consulting firm that helps clients measure, manage, and market their social and environmental performance. **www.goodcompany.com**

Good Company was asked to do a review of the city's efforts for internal management efforts as well as to produce a public document entitled, "The City of Eugene and Sustainability". This document has been used to provide information to the public to increase community awareness.

Following this article is the "The City of Eugene and Sustainability" brochure.

Public Reporting of Sustainability Performance

Public reporting of sustainability performance is an effective method for promoting goodwill in the community and with the most interested stakeholders. In Eugene, a city with a long history of an active bottom-up and top-down sustainability effort, a public disclosure document was essential for the citizenry to keep pace with the progress being made. In fact, the catalyst for the creation of this transparency vehicle was uninformed criticism by the public and elected leadership. The other driver was the lack of an informed and complete response that was available at hand. However, in order to extend the usefulness of the document as an internal education tool, the document was written for an educated layperson. **www.ci.eugene.or.us/environment/ Sustainability report.pdf**

Sustainability reporting can be an onerous task that has no limits. For some, the definition of sustainability includes the limitless connection of systems and species that results in a great interdependency. However, for this report, we decided a "walk the talk" perspective would serve the stakeholders interests while conveniently adding a distinct boundary that could be worked with. Therefore, we adopted an internal operations focused strategy. As public understanding becomes more sophisticated on the importance of sustainability, the services that the city provides will also be included in future reporting documents.

In order to select the aspects for discussion, we decided the best thing to do was to follow the premise of thinking globally and acting locally. By looking at global frameworks such as the Global Reporting Initiative, we were able to determine the environmental and human resource concerns to discuss. This also supported the educational mission of this document. The introduction to each aspect was titled, "Context" and briefly explained why the issue was important. While the detail was limited to promote an easy assimilation by any

reader, source links were provided for those who wanted to learn more about the issues or the specific programs within the city's operations. The links were carefully chosen and were devoid of advocacy groups to ensure a tone that would be accessible to all.

By asking the employees about the global issues, we were able to draw out the operating existing data streams, which provided our indicators. This was a useful way to show all stakeholders that much of what is a global concern is not only being managed, it is also being measured objectively. Disclosing performance measures communicates three things: the city is actively managing towards an outcome-oriented goal; the city is willing to be held accountable for progress, and the city is moving beyond "pollyanecdotes." The figures are critical to temper the memorabilty of the stories. Often when a passionate effort is made in a pilot project, the project is deemed a success. While it may be a success that builds momentum, it is likely that there are substantial improvements that need to follow. This leads to the final and perhaps most important of the transparency document - "What's Next?"

The "What's Next?" section serves multiple purposes well. First, it communicates that sustainability is an ongoing pursuit of continual improvement. Until we are an entirely environmentally neutral society with complete social equity, we have something else to get done. Second, it boosts the credibility of the disclosure. If all you are telling is "Good news," your efforts will have the appearance of "Greenwash." Everyone knows that we have an imperfect world and humility is the only credible response. Third, it gives the managers some control in following through on a long term, systematic effort to make change. While public discourse and citizen engagement is essential, it also sometimes is fickle and can disrupt important programs.

Conclusion

The City of Eugene has a lot to be proud of. It also has a long way to go. By managing sustainability intentionally, we are discovering that we can manage innovation. By measuring and reporting our success, we build the trust with the internal and external stakeholders that gives us room and time to continually improve.

The City of Eugene and Sustainability

The City of Eugene is committed to effectively managing its impact on the economy, the environment and the people of Eugene. By considering both the short- and long-term costs and impacts of the City's operations, the City can steer towards a sustainable system that provides the best value and service for the community.

This brochure contains a sampling of the City's performance and recent efforts. While this is not an exhaustive inventory of the City's service impacts, it does illustrate the breadth and depth of the City's internal activities and commitments. This brochure also provides a brief definition of sustainability issues with internet links to learn more about the subject and the City's activities. While the scope of the issues is global, everyone should participate in regional strategies and actions to strengthen the local community.

City's sustainability policies:
http://www.ci.eugene.or.us/environment/city_policy.htm.

City's Resolution on Sustainability:
http://www.ci.eugene.or.us/PDD/Sustain/resolution_no_4618.htm

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Environment Habitat • Energy and Fuel Use • Water Use • Toxicity

Habitat

Context:

Careful management of our land and waterways is necessary to ensure the health and well being of all species in our bioregion and watershed. Urban forests, open-space, waterways and wetlands can provide both an ecosystem for critical species and beautiful places to recreate. Proper habitat management will also ensure a steady supply of "ecosystem services" such as clean air and water and flood control.

What's happening:

There are three ongoing initiatives to preserve habitat and watersheds.

- Wetlands program – The City, the U. S. Bureau of Land Management, and The Nature Conservancy have acquired approximately 2,500 acres to date.
- Ridgeline Trail – 1,067 acres have been acquired to date.
- Stormwater management – Over 18 acres of stream corridor, which were specifically targeted for improving and maintaining water quality and natural resource values, have been acquired. The target is 173 acres.

What's next:

- The native plantings at Tugman Park (see case study below) hadn't taken hold when a 10-year event storm hit. The ensuing rush of stormwater pulled out or damaged many of the new plants. The new plantings are being evaluated this summer and will be replanted as necessary this fall.
- The West Eugene Wetlands Program is moving from the acquisition phase to the restoration and maintenance phase.
- The Stream Corridor Acquisition Program is altering its goals to match available resources.
- The City is continuing its efforts to improve the effectiveness of working with volunteers.

Links:

United Nations Intergovernmental Panel on Climate Change:
www.ipcc.ch

Center for Disease Control and Prevention's Second National Report on Human Exposure to Environmental Chemicals
www.cdc.gov/exposurereport/

EPA's Ecosystems web site:
www.epa.gov/ebtpages/ecosystems.html

UN World Water Assessment Program:
www.unesco.org/water/wwap/

EPA's Wetlands, Oceans and Watersheds web site:
www.epa.gov/owow/

EPA's recycling page:
www.epa.gov/ebtpages/pollrecycling.html

BRING Recycling:
www.bringrecycling.org/deconstruction.html

Eugene's programs:

Computer recycling program used by the City:
www1.us.dell.com/content/topics/segtopic.aspx/dell_recycling?c=us&cs=19&l=en&s=dhs

Wetlands program:
www.ci.eugene.or.us/parks/wetlands/

Ridgeline Trail:
www.ci.eugene.or.us/parks/ridgeline/RIDGE_acq_proj.htm

Stormwater management:
www.ci.eugene.or.us/pw/storm/waterways/

Case study: Tugman Park and Creek

The initial plan to address flood control issues in the park was to install a pipe for runoff but City staff sought an alternative that would also improve habitat. The stream channel was cut to meander rather than run straight and natives were planted along the banks. This slowed the water flow, and as the native plants grow, these conditions will eventually help provide temperature control and improve overall habitat.

Energy and Fuel Use

Context:

Our sources of energy impose substantial costs on our health and the economy through direct pollution such as smog, particulate pollution and acid rain. Energy use is also the major driver of climate change: rising concentrations of carbon dioxide from fossil fuels are bringing uneven and unpredictable changes in temperatures, weather, winds and ocean currents. These changes have potentially massive impacts on biodiversity, rainfall, agriculture and forestry, sea level, and the geographical range of infectious diseases.

What's happening:

- The City's wastewater treatment plant captures the methane gas it produces and turns it into electricity, providing over half of the main plant's needs. This not only reduces the climate impacts of the methane by about 95%, but it also reduces the need for further production of energy. In 2003, the captured methane provided a savings of $234,324.
- The wastewater plant is also installing a sulfur oxide (SOx) filter to further reduce climate changing emissions.
- The City's passenger vehicles are being replaced with hybrid-powered vehicles as they come due for replacement. Also, all diesel equipment now runs on 20% biodiesel and will soon switch to a mix with 80% ultra-low sulfur diesel.
- EWEB's Energy Edge Award went to the new Library for its efficient design. Through a collaborative design process with EWEB, the new Library improved its energy efficiency by 30% over Oregon building codes. Savings on gas and electricity are expected to be about $25,000 per year.

What's next:

- Create a centralized collection point for all energy use data and improve reporting of that information in order to ensure ongoing improvements.
- Create an energy strategy for City pools, which account for 25% of all energy used in general fund City buildings.

Water use

Context:

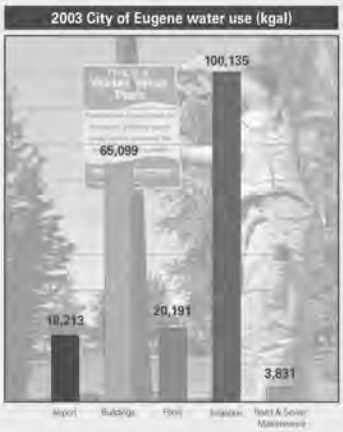
By using water efficiently and by adapting our needs to our water supply and its fluctuations, we can enjoy a regional resource that supports residences, businesses and agriculture for many years to come. Because of state health codes, nearly all the water we use is treated. Treated water has concerns that go beyond the draw from our rivers and water tables. Large amounts of energy and chemicals are used to pump and purify the water, resulting in hidden air and water pollution concerns as well as climate change impacts.

What's happening:

Since 1992, the City has been upgrading its irrigation systems with a weather-controlled device. Typically, this type of system reduces water consumption by 35-40% over a conventional timed system. Currently 97.3% of all park acreage is under this type of control.

What's next:

Water use data, like energy use data, needs to be centralized in order to be managed consistently.



Toxicity / Persistence

Context:

Human-made chemicals are used in agriculture, health care, manufacturing, construction and many other important applications. Government and industry have tested only a few hundred of the estimated 70,000 chemicals in common use in the United States for health impacts, and many of those are linked to health and environmental problems. The most persistent chemicals endure years beyond their use and often collect in the food chain.

What's happening:

- Since 1989, Parks Maintenance has actively managed chemicals according to its Integrated Pest Management Plan (IPM). Examples of how this works are:
  - In 2002, on the 548 acres of Eugene parkland, the City used less than 13 gallons of non-persistent spot herbicides. This comes to approximately 3 ounces of herbicide per acre.
  - Since 1989, only three low-toxicity insecticide applications have been made at all but two of the City's parks. At the other two parks, Hendricks and the Rose Garden, the specialized plants require a higher level of maintenance against pests.
- Nearly all custodial chemicals used by Facilities are certified by Green Seal, an independent organization that sets standards for and certifies a wide variety of environmentally sound products.
- Used computer equipment is disposed of by the following methods, depending on its usefulness:
  - Sale at auction for reuse,
  - Donation to non-profit organizations for reuse, or
  - Given to organizations that remanufacture equipment and properly dispose of or recycle rest.

What's next:

- A centralized chemical tracking system for Parks and Open Space is up and running. This system will track all pesticide applications by the department and will eventually be expanded city-wide and will include fertilizer applications.
- The City's pools are its largest chemical users. Unfortunately, every chemical used is required by state and local health codes. The City needs to work with health officials to find an alternative to chemically intensive water treatment in pools.

Solid waste / recycling

Context:

Eugene, like elsewhere, has experienced a long-term upward trend in the amount of solid waste generated. Although we produce waste like most other communities, our residential recycling rate is among the highest in the country. Recycling lessens our burden not just on landfills and trash collection systems, but also on virgin resources. Additionally, recycling and re-use industries are a growing piece of economic development.

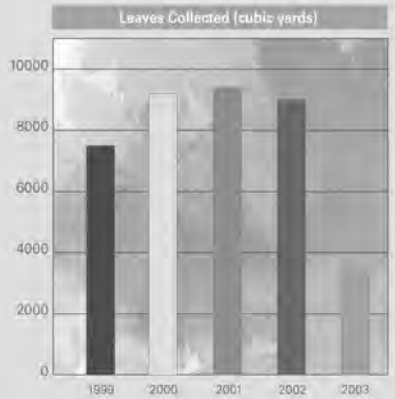
What's happening:

- 90% of the material from the teardown of the former Agripac site was recovered for reuse with support from BRING Recycling.
- The City's Leaf Composting Program generates 1,500-3,000 cubic yards of compost a year from leaves collected from city streets.

The graph at right shows the amount of leaves collected each year before composting. The dramatic reduction in leaves collected in 2003 is due to an increase in homeowner and Community Garden requests.

What's next:

- The City will seek to determine its operations' recycling rate so that a baseline can be set and improvements measured. This involves gathering information on city-wide operations to discover the total amount of waste generated and the percentage recycled.
- Implement the recommendations from the All Associates Group's report on reducing paper use in City operations.



Employees

Context:

The City's ability to perform its work depends first and foremost on its employees. The City seeks to be a model employer and to deliver high-quality services at a reasonable cost to citizens. Since turnover is expensive – hiring, training and other transition costs are an estimated 150% of that employee's total compensation – a healthy and happy workplace is also a lower-cost and more efficient government for the citizens.

Satisfaction

What's happening:

A 2002 survey of City employees found that 90% feel they have a good job or better.

What's next:

The City must continue to improve professional development trainings and work for better communication among and between departments.

Economy

Context:

City government has a significant effect on the local economy. Salaries and benefits paid to City employees have a ripple effect on local businesses. Purchasing goods and services from the local area supports a more stable tax base and promotes employment outside of the City's operations. And by operating efficiently, the City reduces the tax burden on Eugene citizens.

What's happening:

- The City purchases between 70% and 80% of all goods and services from local vendors. The biggest sectors are construction and trade services.
- The City operates and manages the airport without the use of local tax dollars. The airport provides essential connectivity to other markets for Eugene's businesses and citizens.
- The City was actively involved in encouraging Delta Airlines service in Eugene. This brings competition to the marketplace and makes travel more affordable. The airport provided $100,000 to promote the new service to the community. To ensure viability of the Delta's new service, the City backed it with $400,000. The airport also supported similar projects in 1999 and 2000.
- Since 1984, the City's Business Loan Program has helped to create over 1,000 jobs by providing over $11 million of reasonably priced financing to Eugene businesses.

What's next:

- The Mayor's Committee on Economic Development presented its recommendations to the City Council in August 2004. During the early part of 2005, the council will review and act on the Committee's recommendations.

Links:

City's 2004 Adopted Budget:

www.ci.eugene.or.us/ASD/Finance/Budget/FY04Adopted/04AdoptedBudget.htm

City's Business Loan Program:

www.ci.eugene.or.us/PDD/Development/BDF/BDFinfo.htm

Employees

Health and safety

What's happening:

- For the last two years, the League of Oregon Cities awarded the City of Eugene the Silver Medal Safety Award.
- The Employee Health and Wellness Program, which encourages employees to monitor and maintain their health, provides savings of $51,606 per year from reduced sick leave.

What's next:

Increase promotion of the Health Risk Appraisal program, so that employees can stay healthier and reduce sick days.

Diversity

What's happening:

Eugene is a recognized leader in hiring equitably and creating a respectful workplace. The chart at left demonstrates that the City's workforce closely reflects the demographics of our community.

What's next

While diversity training is ongoing and successful, in the future, trainings will be integrated into other training modules to make it more accessible.

Category	City Employees % of pop.	% of Lane County pop.
African American	2.1%	0.8%
Hispanic	3.0%	4.6%
Native American	2.7%	1.1%
Asian	2.4%	2.3%
Disability	3.6%	N/A

From the City of Eugene's Diversity Annual Report, June 2003.
www.ci.eugene.or.us/HRRS/Diversity/AnnualRpt.htm

Links:

Wall Street Journal link on the cost of employee turnover:

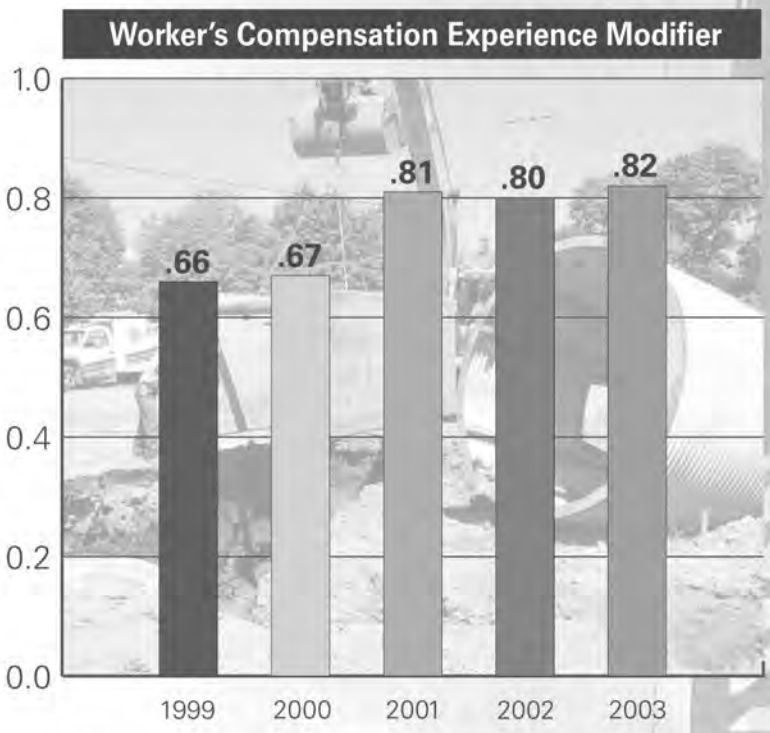
www.careerjournaleurope.com/hrcenter/articles/19980305-agno.html

City's Risk Report:

www.ci.eugene.or.us/HRRS/Risk/RiskRpt03.pdf

City's 2003 Diversity Annual Report:

www.ci.eugene.or.us/HRRS/Diversity/AnnualRpt.htm



This table shows that the City of Eugene's workers' compensation claims have been better than the average city claims rates (1.0) over the last five years.

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Design: Sally Markos

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Portland's Sustainable Edge: Policy, Partners and People

Amy Stork
Communications Specialist, City of Portland Office of Sustainable Development

Twenty five years ago, Susan Anderson was the only person at her college to take a double major in Environmental Science and Economics.

"They thought I was crazy," she says. "No one at the time thought those two things had anything to do with each other."

Today, it's easy to see how wrong they were—and how right she was.

Anderson's novel interests have landed her at the helm of the City of Portland, Oregon's Office of Sustainable Development, the agency responsible in large part for guiding the progress of the place recently ranked most sustainable U.S. city by the San Francisco group Sustainable Circles.[1] The Office of Sustainable Development tackles global warming policy, solid waste and recycling, sustainable food policy, green building and energy policy for the City of Portland. For the most part this government agency doesn't regulate—it concentrates instead on strategically creating and transforming markets for environmentally sound buildings, services, energy and more.

Each spring the Natural Building Convergence draws hundreds of enthusiasts to Portland to learn new techniques and build community structures like this"cob sanctuary," made from a mixture of clay and straw.

The Portland Edge

According to Anderson, Portland gets its yen for green from a unique combination of factors: policy, partners and people.

"We have policies that make long term thinking possible," she says. "We have support from non-profit and other government partners. And mostly we have the people of Portland, this community spirit that says we aren't afraid to tackle the big issues."

The region's history of bucking the trend doesn't hurt, either.

In the late 1960s and early 1970s under Governor Tom McCall, Oregon became known as an environmental leader with landmark legislation on such issues as land use, the open beach bill, cleaning up the Willamette River, and forming the Oregon Department of Environmental Quality. The state's 1971 Oregon Bottle Bill pioneered the concept of redeemable bottles to reduce litter.[2]

Portland cut its teeth on citizen commitment to sustainability in the 1970s, when activists blocked a freeway that would have sliced through historic neighborhoods.[3] Bright young politicians lobbied to shift the funds that would have built the freeway into public transportation infrastructure and other projects. The money made Portland's first light rail line possible in 1986, and opened the door to new ways of thinking about how to shape a city.

Portland's legacy of bold environmental policy continues. In 1993, the city became the first local government in the U.S. to adopt a plan to address global warming.[4] It is also one of only a handful of cities that have set a target for reducing all city emissions rather than those associated just with local government. Since its climate change plan was introduced, Portland has bucked the national trend by reducing per capita emissions of greenhouse

gases by 13% while experiencing strong economic and population growth.[5]

A combination of government initiatives and citizen passion may be the unique recipe that has made Portland so successful. For each effort launched by the Office of Sustainable Development or other city bureaus, there is an equally strong grassroots effort that lends sparkle to what might otherwise be seen as a bureaucratic push.

Built green from top to bottom

Perhaps the most tangible example of the dynamic combination of government initiative and citizen action is the green building movement in Portland.

In 1998, the city created the Office of Sustainable Development and within it the G/Rated green-building program. The program communicates with homeowners, builders and suppliers to encourage connections between building green and economic development. Policy-level work has included requiring all City buildings and buildings financed through the Portland Development Commission (the city's economic development agency) be certified with the US Green Building Council's Leadership in Energy & Environmental Design (LEED) standards. Today, Portland has more LEED certified buildings than any other North American city. In November 2004, Portland's convention center hosted more than 7,500 people for the 2004 US Green Building Council conference.

In 2001 Portland also created the first green investment fund, doling out $800,000 for 74 cutting-edge trial projects from eco-roofs (rooftop plantings that absorb rainwater and regulate building temperature) to innovative HVAC systems to reduce energy use in commercial buildings. In the fall of 2004, the City announced it will renew the fund with $500,000 a year in grants for the next five years.

Meanwhile across the Willamette River on Portland's east side—the very neighborhood that would have been slashed by the doomed Mt. Hood Freeway—a young architect and his friends were experimenting with creating new neighborhood gathering places and reducing human impact on natural systems.

Mark Lakeman and his neighbors launched the City Repair Project in 1996, with the aim of creating public spaces designed with creativity, artistry, and compassion. Most of City Repair's projects focus on what they call "Intersection Repair," which turns intersections into gathering places with painted streets, corner kiosks and small tea houses. After a few initial hitches, the City of Portland embraced the idea, and City Repair has become a model for citizen-driven neighborhood improvements.[6]

City Repair Project was the impetus for the Village Building Convergence, an annual gathering dedicated to "the Restoration of Communication and Sharing, Working Together to Rebuild our Common Culture, and to Transform the City into a Network of Ecological Village Places." During a week each spring, natural building enthusiasts take on up to a dozen neighborhood projects, from public benches to backyard saunas built from straw, 'cob' or reclaimed material.[7]

And in North Portland, the non-profit ReBuilding Center offers reclaimed materials from two-by-fours to kitchen cabinets—and uses the profits to fund 'neighborhood conversations' meant to open channels of communication between all residents of the rapidly gentrifying neighborhood.[8]

"Vote for the Recumbent"

Repeatedly voted "Best Bicycling City in North America" by Bicycling Magazine, Portland also leads the way in promoting and enabling alternatives to the personal automobile. In addition to a light rail system that connects east, west and north suburbs to the downtown core, the city boasts a streetcar connecting downtown to residential and commercial districts, and nearly 700 miles of bike lanes and off-street bike paths. A 2004 Report titled "The Young and the Restless: How Portland Competes for Talent" found that Portland tallies the nation's eighth-fastest growth rate among 25- to 34-year-olds regardless of education, in part because young people are attracted by public transportation, attitudes toward bicyclists, distinctive neighborhoods and independent businesses.[9]

Commitment to alternative transportation parallels green building in its mix of grassroots and policy elements. Oregon state law requires that "reasonable amounts" of state highway funds be expended by the Department of Transportation, counties and cities to provide walkways and bikeways.[10]

The results are evident, with census data showing that commuting on foot and bike increased almost 10% between 1990 and 2000 while rates of people driving alone have decreased.[11] Bicyclists are seen rain and shine in the Rose City, and have even spawned a distinct subculture that includes events such as a free monthly breakfast for bike commuters heading into downtown; the annual Bridge Pedal, where thousands of riders take over the city's dozen bridges; and gangs of adults on children's bikes "Zoobombing" from a hill west of the city into downtown each Sunday evening.

Tom Potter, a former Portland police chief who ran successfully for mayor in the fall of 2004, actively courted the bicycling vote with weekly rides and t-shirts sporting the slogan "Vote for the Recumbent." (The Mayor himself rides one of the unusual feet-first bikes.)

Transportation currently accounts for over 40 percent of local greenhouse gas emissions in Portland and is therefore a critical area for action. Besides encouragement of alternative transportation, Portland is using carbon-offset funding to retime traffic signals and improve traffic flows on local roads,

limiting unnecessary braking, acceleration and idling and thus reducing emissions from vehicles. City vehicle fleets have also changed with City of Portland purchasing more than 30 highly fuel efficient hybrid vehicles since 2001. Indeed, on a per capita basis more hybrid vehicles are sold in the Portland area than anywhere else in the US. Overall, per capita gasoline use has fallen almost 10 percent since 1990, contributing over $40 million annually to the local economy.

One person's trash

Much of Portland's innovation in the world of solid waste and recycling comes from its strong partnership with Metro, the unique regional government serving a three county area. Metro has worked doggedly to reduce the waste stream by helping local municipalities maximize recovery of major garbage inputs such as construction debris, organics and paper. The City of Portland boasts an overall recycling rate of 55 percent (one of the highest in the nation) with a goal of 60 percent by 2006.

The City and Metro recently launched Portland Composts!, a voluntary program for food businesses to contract for hauling of food waste including food soiled paper, plate waste and meat and dairy scraps. The launch represents a breakthrough in public-private partnerships, after a long search for a private firm to provide the composting services at the level desired by the regional government. Although the collected waste is currently being shipped to a facility in Washington State, a composting plant will locate in Portland within 18 months. Composting is expected to take a significant chunk out of the nearly 30 percent of Portland's waste stream that is made up of organic material.

Even trash inspires passion in Portland. Located in a non-descript warehouse on a busy street, the School and Community Reuse Action Project—known as SCRAP—collects reuseable items from local businesses and distributes them to educators, artists, families and kids. On Saturday mornings the space teems with children and their parents, Do It Yourselfers and teachers on the prowl for everything from empty film canisters to fabric scraps. The truly dedicated, meanwhile, can become certified "Master Recyclers" through a ten-week course offered for free by the Office of Sustainable Development in exchange for a commitment to education and outreach voluntarism.

Build It Green!, an annual tour of homes using innovative building techniques and materials, attracts over 750 people. Bicyclists receive a deep discount on tour tickets.

The young women of Portland have even taken to recycling last season's fashions at so-called "Naked Lady" clothing exchanges. The parties bring women together to clean out closets and swap old duds, then donate whatever is left to a shelter or thrift store.

100% renewable by 2010

Energy efficiency has always been a priority for Portland. Within the city government, an energy@management program called City Energy Challenge has reduced the City's energy bill by $14 million since 1991. Recently the City completed converting its traffic signals to highly efficient LED bulbs, an improvement that saves almost five million kWh and over $500,000 annually in energy and maintenance costs.

This energy efficiency work has been extended to the residential and business communities via the Energy Trust of Oregon. Founded in 2000, the Trust administers energy efficiency and renewable energy programs for customers of the region's utilities. In its first two years the trust provided energy efficiency incentives to over 200 businesses and 14,000 Portland households generating annual bill savings of $1.5 million.

In addition to work on energy efficiency, Portland's Local Action Plan on Global Warming sets aggressive goals for renewable resources, instructing the City to acquire 100 percent of its energy needs from renewable sources by 2010. Current renewable energy purchased stands at around 11 percent. In order to meet its long term goal, the City has invested in a number of new schemes including hydroelectric turbines in its drinking water reservoir system and a fuel cell powered by waste methane. This spring the City will issue a Request for Proposals for private sector entities to provide the remainder of the City's power needs from new renewables.

Fresh local food

Bicycling may be fun and trash can be cool, but nothing gets Portlanders more excited than fresh local food. The city

is rife with farmers markets. Dozens of Community Supported Agriculture farms sell yearly or seasonal produce subscriptions, delivering baskets of picked-that-day veggies to drop-off sites in various neighborhoods. Everything from pizza to tofu comes in organic—and widespread demand for what might be "specialty" foods in any other town, helps keep costs competitive.

The City of Portland and Multnomah County formed a citizens' Food Policy Council in 2002. Through its work in health, economic development, recreation programs, solid waste, purchasing and urban planning, the City and County can influence how food gets from the farm to the table and how food waste gets back to nature. Council projects have included working with local prisons to purchase more food from local farmers, holding workshops to help immigrant farmers connect to marketing opportunities, and conducting food security research in low income communities.

Let it Rain

Portland's generous helping of winter rain sends billions of gallons of stormwater into the city's sewer system a dozen or more times each winter, leading to overflow into the Willamette River. To combat the problem Portland is building two "big pipe" projects to divert stormwater, and new regulations mandate that all new buildings manage all runoff on site. Bioswales—plantings that filter or absorb rainwater—are visible at many commercial buildings including the Oregon Convention Center. And lawns sport signs proclaiming "I disconnected my downspouts to protect Portland rivers."

Looking forward

Both clouds and sun are on the horizon for sustainability efforts in the City of Roses. A recent ballot measure passed by voters in November stipulates that property owners must be compensated for any loss of land value due to regulation—a move which will impact the state's hallmark land use rules. Despite the bicycling and transit numbers, vehicle miles traveled in the Portland area are on the rise. And funding challenges are hitting both city and state agencies.

In January Portland launched its commercial food composting program. Composting by restaurants and other large businesses should help the City meet its ambitious goal of recycling or diverting 60% of its waste by the end of 2005.

Nonetheless, the City of Portland continues to take on new challenges. This spring, the Office of Sustainable Development will issue an RFP seeking proposals for utilities or other entities to provide 100 percent of the City's power from renewable energy sources—most likely from a wind farm in gusty Eastern Oregon. Tom Potter, the new mayor, is formulating a broad economic development strategy leveraging Portland's green image and status. And the people of Portland are still living proof that things can be done differently.

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Sustainable Austin

Richard Morgan
Austin Energy Green Building Program Managaer

The City of Austin is often referred to as a "green" oasis in Texas. Where the other major Texas cities have historically been more concerned with attracting business and industry to increase the tax base and attract new jobs, Austin from the 1890s to the beginning of the 21st century considered itself a "residential city" in the words of early city officials. Extolling the virtues of scenic beauty, clean air and water, many if not most citizens of Austin were happy to be the seat of state government, home to the University of Texas, and a city of small businesses. They felt no need to attract industry to their city.

This early environmental ethic set the stage for grassroots involvement in the two events that would shape Austin's sustainability movement as the city moved into the 21st century. These events were the development of land on Barton Creek and upstream from Barton Springs Pool in the early 1960s, and the contested decision by city council to participate in the building of the South Texas Nuclear Project in 1973.

Barton Springs Pool is a natural, spring fed pool just a mile southwest of downtown Austin. It has been used for swimming, bathing and to relieve the almost unbearable Central Texas summer heat since before Europeans arrived in Texas. Barton Springs, with it's cool waters, towering shade trees, and laid back gatherings became a symbol of the idealized Austin lifestyle. When a developer planned to build an apartment complex on the ridge above the pool, the Austin environmental community feared that the run off from the site would destroy the water quality and the ambience of the pool. Activists organized to lobby city council to stop the project. Even though they were unsuccessful, the foundation had been laid for an organized, grassroots, environmental movement that would play a major role in the future of Austin politics.

In 1972, the city held a bond election to buy a 16% interest in the South Texas Nuclear Project for the city's municipal electric utility (Austin Energy). Voters rejected this bond issue, but after the mideast war and oil embargo of 1973, the voters narrowly approved the bonds. In 1979 voters were again asked to approve bonds to pay for the city's share of cost overruns at the nuclear plant and did so. In 1981 voters approved a measure to authorize the city to sell its interest in STP, but the city could not find anyone to buy it. In the wake of Three Mile Island, the city that prided itself on its laidback lifestyle and environmental awareness found itself owning part of a nuclear power plant that was hundreds of millions of dollars over budget and years behind schedule. (STP did not go fully on line until 1992.) Vowing to never again be put in a situation where their only energy supply choices were ones they considered bad, city government established the Environmental and Conservation Services Department (ECSD) to operate energy efficiency and later, water conservation, planning and air quality programs. In 1995 ECSD became P,ECSD (Planning, Environmental and Conservation Services Department). In the wake of electric utility deregulation in 1997, P,ECSD was disbanded and the energy efficiency programs were moved to Austin Energy. Water conservation was placed with the Water Utility, and planning and air quality was placed in the new Transportation, Planning and Sustainability Department.

The 1990s brought tremendous growth to Austin. Our population grew by 41% between the 1990 and 2000 census, pushing the population of Austin to 656,562 and the Austin/San Marcos M.S.A. to over 1.3 million. This level of growth stressed Austin's infrastructure and placed even greater emphasis on planning, conservation and efficiency efforts. Even though they are no longer housed in a single department, the need for collaboration has increased. Fortunately, in 1990 the city, working with the Center for Maximum Potential Building Systems, the local home builders' association and grassroots supporters, decided to develop what would become the nation's first organized green building program. This program would focus not only on energy efficiency and water conservation in buildings but would challenge the entire industry to account for all of the impacts the construction and operation of buildings would have on the environment and the city's infrastructure.

Green Building

The Austin Energy Green Building Program evolved out of the Austin Energy Star Homes Program. Energy Star Homes was operated as an alternative path to energy code compliance for home builders. The program was popular with builders because the staff worked with the industry to help builders and designers find the best approach to meeting or exceeding the requirements of the City's energy code rather than simply inspecting homes and giving them a red or green tag. Green Building continues this collaborative approach in its efforts to rate the sustainability of residential and commercial buildings in Austin.

Green Building has developed rating tools for single family homes, multifamily complexes and commercial buildings. Each of these rating tools was developed to be responsive to the local climate, the requirements of Austin's building codes, building industry practices specific to Austin and the

needs of the community. Homes and buildings are rated on a scale of one to five stars, with five stars being the highest level attainable.

These rating tools evaluate a building's sustainability in the areas of;

- ➙ Energy Efficiency (emissions reductions)
- ➙ Water Conservation and Water Quality
- ➙ Efficient Materials Use and Recycling
- ➙ Indoor Environmental Quality
- ➙ Community Issues (Impact on infrastructure and community building).

The Green Building Program operates as a member-based program. Requirements for membership are that a firm be construction industry related, that representatives of the firm attend at least two of the monthly Green Building Seminars each year and that the firm rates or provides information on all their projects in the Austin Energy service area. There are no membership fees and all services provided in the service area are free to members. Each member is assigned a staff representative who is the point of contact with the program for that member. This close collaboration between the program and the industry allows Green Building to act as the first point of contact for the City with building projects. As program staff work with the design teams and builders, they are able to refer the projects to other City programs that can have an impact on sustainability.

Residential Energy Efficiency

The Austin Energy Residential Energy Efficiency program offers financial incentives to both single family and multi-family projects for high efficiency equipment and operates the residential Power Partner Program.

The Appliance Efficiency Programs for new and existing homes offers rebates to customers installing high efficiency HVAC systems and window air conditioners. The minimum efficiency for HVAC equipment is 13 SEER and for window air conditioners is 10 SEER.

The Total Home Efficiency Loan Program offers low-interest loans to customers upgrading existing homes' energy efficiency by installing correctly sized high efficiency HVAC systems, installing solar screens, upgrading attic insulation, and sealing and repairing duct systems. The interest rate on these loans is reduced by a subsidy from Austin Energy.

The Total Home Efficiency Rebate Program offers cash incentives for the same measures as the loan program for customers who choose not to use the low interest loans.

Residential Energy Efficiency also operates the Free Weatherization Program which offers low-income, elderly and physically/mentally disabled customers free energy audits, and for those who qualify, free improvements to their homes. Free Weatherization services include the installation of attic insulation, solar screens, caulking, weather stripping of doors and windows, re-glazing of windows, sealing and repair of ducts and other minor energy-related improvements to improve substandard housing conditions. Free Weatherization participants may also apply for Home Energy Loans or for Appliance Efficiency rebates.

The Multi-Family Incentive Program offers technical assistance through energy surveys, recommendation of cost effective energy efficient retrofits and cash incentives to multi-family project owners. Incentives are available for the installation of high efficiency HVAC equipment, solar screens, attic insulation, duct sealing and repair and high efficiency fluorescent lighting upgrades.

The Power Partner Program is a direct load control program for Austin Energy residential customers. The program controls peak energy load by installing free programmable thermostats with a communications module in homes. The communications module allows Austin Energy to time the run cycles of more than 35,000 air conditioning systems in the City to manage the peak load on the electric distribution system.

The Cycle Saver Program performs the same service as the Power Partner Program using control timers on multi-family electric water heaters.

The Duct Diagnostic and Sealing Program provides homeowners advanced duct diagnostic testing on their duct systems to determine if there is significant duct leakage and to identify comfort problems due to improperly sized ducts. If deficiencies are found, the program offers incentives to make the needed improvements to the system.

Commercial Energy Management Services

The Austin Energy Commercial Energy Management Services group acts as the energy manager for City of Austin owned and leased buildings and infrastructure. This group provides energy audits and recommendations for improving the energy efficiency of municipal buildings, street lights and traffic lights. In addition to managing energy use in municipal buildings, Commercial Energy Management offers services and incentives to commercial and industrial customers of Austin Energy.

Commercial Rebates are available to business customers who install new, energy efficient equipment that reduces summer peak electric demand. Eligible equipment includes lighting, HVAC systems, thermal storage, motors, Variable Frequency Drive Systems, energy management control systems, reflective roofing and certain custom technologies.

The Commercial Power Partner Program provides load management programmable thermostats that allow building managers to schedule the operating times for HVAC systems. The thermostats also have radio-controlled devices to allow Austin Energy to control the HVAC system cycles on peak use days and lessen the impact of peak load days on the electric distribution system.

Barton Springs with the city of Austin in the background.

Inter-local Agreements allow Austin Energy to provide customized energy consultations and energy project solutions to institutional and government agencies. These agreements have been put in place with school districts, public institutions, State, Federal, County and Municipal Departments that require special assistance in energy management services.

Commercial Energy Management provides Engineering Services to Austin Energy's district cooling business. District cooling operates two downtown chiller plants and one thermal storage facility to serve the cooling needs of buildings in the central business district and is in the process of developing two more systems. One of these will be at the Robert Mueller Airport Redevelopment Project in central Austin and the other is located at an industrial site that is being redeveloped into a shopping mall and multifamily housing development.

The Thermal Energy Storage Program provides rebates to commercial building owners who install thermal storage systems that use off peak, nighttime electrical energy to store cooling energy (ice) to cool their buildings during peak daylight hours.

The Solar Photovoltaic Rebate Program provides incentives to homes and businesses that install PV systems. This program offsets part of the cost of installing expensive PV systems, reduces the need for peak generation capacity and helps to create a market for new, clean energy businesses in Austin.

Green Choice

Green Choice is Austin Energy's Renewable Energy program for consumers. Customers pay a Green Choice charge on their utility bills instead of a fuel charge. Currently the Green Choice premium is about one cent per kilowatt hour. Green Choice customers have subscribed to over 400 million kilowatt hours of renewable energy in 2005, making it the number one utility sponsored renewable energy program in the nation.

Air Quality

The Austin Energy Air Quality Program has helped pave the way for a new governance process to enhance regional air quality. We were a leader in developing a partnership with the local and national regulatory agencies to improve regional air quality. For over three years, the City of Austin negotiated with 10 other local jurisdictions in its MSA to determine the steps necessary to meet the eight-hour ground level ozone standard. This new regional partnership with regulatory agencies was a national model for action and cooperation, and the EPA took it nationwide, labeling it Early Action Compact.

As a principal member of an Early Action Compact, the City of Austin has requested that the State of Texas, through the SIP (State Implementation Plan) process, impose eight rules to improve air quality in the region. These eight rules include items such as Inspection and Maintenance Program for vehicles and Stage 1 vapor recovery for local fueling stations. In addition, the City has agreed to participate in over 40 voluntary programs, from reducing Urban Heat Island impacts to encouraging alternative transit, and from ozone action day observation to encouraging alternative fueled vehicles.

Activities to date include the installation of a public access alternative fueling station, over 20 hybrid vehicles in the City fleet, award winning use of propane in our fleet, emission reductions from local power plants in excess of state law, an aggressive green energy as well as energy and water conservation programs, to changing landscaping and development regulations to encourage trees and transit oriented development. All of these activities were evaluated by photochemical modeling and found to be sufficient to obtain compliance with the ozone standard, region wide.

In addition, the City designed an air quality lesson plan that is being implemented in local schools, initiated an anti-idling program, developed and published an award winning air quality brochure and launched a Do Something! campaign that shows citizens things they can do as individuals to improve air quality.

Austin Energy

As the community owned electric utility of the City of Austin, Austin Energy (AE) plays a major role in efforts to ensure the sustainability of the City. Austin Energy funds and operates Green Building, the energy efficiency programs, Green Choice and the Air Quality Program.

In 1984 Austin Energy adopted the concept of the Conservation Power Plant with the idea that each kilowatt of demand reduction is a kilowatt of power generation that will not need to be financed, built and operated. Since that time the AE energy efficiency programs and Green Building have built this conservation power plant to a capacity of 601 Megawatts. This process has saved the citizens and ratepayers of Austin millions of dollars and reduced power plant emissions dramatically.

In fiscal year 2004, AE programs reduced peak demand by 41.36 Megawatts, saving customers 68,071 megawatt hours on their utility bills and reducing natural gas consumption by homes and businesses by 17,564 MCF. These conservation efforts also reduced power plant emissions for carbon dioxide by 39,355 metric tons, nitrogen oxides by 37.95 tons and sulfur dioxide by 7.52 tons. Total suspended particulates were reduced by 9.84 metric tons and Carbon Monoxide was reduced by 49.46 tons.

The last six years have seen a steady increase in the energy efficiency, renewables and air quality efforts in Austin. This is partly due to the maturity of the programs but also to increased demand from citizens and government for sustainability measures. In September 1999, City Council passed a resolution stating, "Cost effective conservation programs shall be the first priority in meeting new load growth requirements of Austin Energy. The utility will increase its conservation efforts and investigate new activities to accomplish this goal." It further states, "The expansion of renewable energy sources in Austin Energy's energy portfolio is a priority of the utility. Austin Energy's goal is to achieve five percent of the energy in its portfolio mix coming from renewable sources by December 31, 2004." At the end of 2004 AE had a renewables generating capacity of 183 mW of wind power, 13 mW of landfill methane and one mW of small hydro. This brought the renewables portion of the generation portfolio to 5.2%, meeting the goal set in 1999.

In June of 2000, city council mandated that all new, bond-funded, municipal buildings meet a U.S. Green Building Council (USGBC) LEED Silver rating. Since then eight municipal projects have been certified or registered as LEED buildings by U.S.G.B.C.

In November of 2003, city council approved a strategic plan for AE establishing energy resource priorities for a 10 year plan and a long term 50 year plan. The resource priorities for the 10 year plan are, in order of their priority; Cost Effective Energy Efficiency, Cost Effective Dispatchable Renewable Energy, Natural Gas, Nuclear and Clean Coal. The priorities for the 50 year plan are: Cost Effective Energy Efficiency, Cost Effective Dispatchable Renewable Energy, Clean Coal/Nuclear, and Natural Gas. The strategic plan also sets a goal of 20% of the energy portfolio from renewables and 15% from conservation by the year 2020.

Austin Water Utility

To sustain the quality of Austin's water supply, the Colorado River, and to use that resource most efficiently, the Austin Water Utility operates a number of programs.

The Water Conservation Program provides education about efficient indoor and outdoor water use. Educational programs include irrigation audits, WaterWise Landscaping and Green Garden programs and rainwater harvesting program to reduce outdoor water use. The Douser Dan program focuses on teaching school children about both indoor and outdoor water use.

Residential rebates are available for replacing old toilets with new, more efficient ones, purchasing high-efficiency clothes washers, installing rainwater catchment and efficient irrigation systems, and installing waterwise landscapes.

For commercial users, water conservation offers process evaluations and rebates for installing water saving equipment and processes and replacing inefficient toilets with newer models. The Water Wise Restaurant program offers evaluations and rebates for water saving technologies. Commercial irrigation evaluations and rebates are also offered to reduce landscape water use.

The Water Reclamation Program has been providing reclaimed water for irrigation since the 1970's. This program conserves nearly 500 million gallons of water in an average year. The potential is much greater. This program reduces demand on raw water sources, primarily the Colorado River, and reduces nutrient loading to the river.

The Wildland Conservation Division of the Water Utility administers the Water Quality Protection Lands Program (WQPL) and the Balcones Canyonlands Preserve (BCP).

Both programs manage lands in a natural state, though for different primary goals. The BCP is a joint venture of the City, Travis County and other agencies. It is aimed at preserving endangered wildlife, specifically two songbirds and six invertebrates, and their habitat found in the more than 13,000 acres owned by the City of Austin. The BCP was formerly under the City's Parks and Recreation Department. The WQPL program was created after Austin voters authorized $73 million in bonds in May and November of 1998 to purchase 15,000 acres for the purposes of protecting sensitive land related to the Barton Springs segment of the Edwards Aquifer.

Long Range Planning

Long range planning for the City of Austin is based on the Austin Tomorrow Comprehensive Plan. Developed in the years between 1973 and 1979 with input from several thousand citizens and numerous civic groups, the plan continues to be an accurate indicator of the direction the people of Austin want their city to take. The eight goals set out in the plan reflect concerns about growth that were paramount in the 1970's and continue to be the major issues facing Austin in 2005.

The Goals

1. Urban Design

The overall objective is to provide general policy guidelines for development and redevelopment responding to issues related to the "design, image, character and form" of Austin. Major objectives in this category are:

110.0 Assure that the development of the urban environment is compatible with the unique natural and constructed features of the Austin area.

111.0 Ensure the compatibility between potential development and the existing natural environment.

120.0 Protect and improve the desirable image and character of neighborhoods and districts.

130.0 Improve the relationship between surface transportation networks and their adjacent environments.

140.0 Improve existing pedestrian environments and adequately provide for pedestrian amenities in proposed urban development.

150.0 Preserve those elements which reflect the varied historical, architectural and cultural inheritance of Austin.

2. Economic Development

This goal recognizes the need to involve the participation of a broad section of citizens, both from the standpoint of determining economic directions, and of enjoying economic benefits.

210.0 Austin's economy should provide a stable, high level of employment and fully utilize human resources while maintaining natural and cultural preservation.

211.0 Develop a municipal policy that is consistent with the community's desire to manage growth and its effects.

212.0 Anticipate and control the environmental impact of economic growth.

213.0 Encourage full employment of all segments of Austin's population.

214.0 Reduce the number of economically disadvantaged persons through greater utilization of human resources.

215.0 Provide relief from the constraints of low incomes through innovative utilization of existing public resources and services.

216.0 Continue expansion of economic opportunity through the elimination of racial, ethnic, and sexual discrimination.

3. Environmental Management

Environmental management refers to the monitoring and regulation of society's impacts on natural physical elements. The environmental features of the Austin area which are deemed to be of public value by the community should be protected by the City.

310.0 Preserve large amounts of open space and assure that the most suitable natural areas are so-reserved.

311.0 Discourage development in the areas of greatest environmental or agricultural value.

312.0 Place important natural areas in the public domain.

313.0 Minimize the environmental impact of activities which are indirectly related to new development.

320.0 Assure the sensitivity of development of environmental features.

321.0 Provide sufficient environmental data to enable adequate evaluation of proposed developments.

322.0 Create strong environmental standards for new development.

323.0 Establish environmental standards for extending streets and utilities into environmentally sensitive areas.

330.0 Protect and improve the water quality of Travis County's creeks, lakes and aquifers.

331.0 Improve the quality of water runoff and lessen peak discharge.

332.0 Improve the collection and disposal of wastewater.

340.0 Improve the management of solid waste.

341.0 Begin planning for the resource recovery of waste.

342.0 Locate landfills properly and employ only the most environmentally sound designs and disposal methods.

350.0 Abate noise disturbances.

351.0 Reduce transportation related noise.

352.0 Regulate noise from stationary sources.

353.0 Encourage acoustic considerations in residential construction.

360.0 Abate air pollution.

370.0 Abate light pollution.

4. Government and Utility Services

This section of the Comprehensive Plan coordinates government and utility service policies with the overall goals of environmental preservation and growth management.

410.0 Provide utility services in the most efficient and equitable manner consistent with sound environmental and growth management policies.

411.0 Minimize environmental damage in the construction and operation of utility facilities.

412.0 Actively pursue programs to promote energy and resource conservation.

413.0 Promote a compact, contiguous and planned urban form using utility service to guide growth.

420.0 Provide efficient government services to all citizens of the community.

430.0 Coordinate the extension of municipal service, land use control and municipal taxing authority through a long range plan which ssets priorities for annexation.

440. Assure quality development through equitable tax policies.

5. Housing and Neighborhoods

This section is designed to provide a coordinated strategy to assure a quality residential environment for all residents of Austin. The overall objective of this topic coincides with a long standing national housing goal determined by Congress to provide a decent home and suitable living environment for every household.

510.0 Improve housing and neighborhood quality.

511.0 Assure the continued identity and improve the quality of Austin's existing residential neighborhoods.

514.0 Assure the availability of funding to low income families for housing maintenance and rehabilitation.

520.0 Increase the availability of housing for low and moderate income households in an integrated setting.

521.0 Reduce neighborhood segregation.

522.0 Provide assistance to increase the availability of standard quality housing to low-income families.

523.0 Reduce the cost and increase the production of new housing for lower and moderate income families.

6. Parks, Open space and Leisure Facilities

The citizens of Austin are aware of the need for parks and open space in which to pursue their leisure interests. It should be the responsbiliity of the City of Austin through the Parks and Recreation Department to provide for park land acquisition, facilities and programs to meet those needs. It should also be the responsibility of the City to maintain and manage recreational land in an economical and adequate manner.

610.0 Provide adequate park land and open space to meet the needs of Austin's citizens.

611.0 Prepare a parks and recreation master plan for the City.

612.0 Expand programs to secure adequate park land and open space to meet a plan adopted by the City of Austin.

613.0 Identify and preserve areas of unique natural beauty, significant habitats of flora and fauna, and areas of historical, geological, and archaeological significance.

620.0 Improve design criteria and evaluation procedures to accomplish a high quality park system.

622.0 Consider the mobility-impaired population of Austin in all planning and construction phases.

630.0 Provide leisure facilities and recreational programs to best meet the needs of Austin citizens.

640.0 Improve maintenance programs for parks, open space areas and leisure facilities.

7. Transportation Systems

The goals and priorities in this section coordinate transportation system policy with the overall goals of urban design improvement, neighborhood protection, environmental protection and urban growth management. They reflect increased concern for safe, efficient public transit systems and non-motorized travel modes, rather than continued dependency of the automobile as the primary means of travel.

710.0 Develop a balanced, safe and efficient surface transportation system.

711.0 Encourage the development and use of public transportation systems.

712.0 Establish and expand the planning, funding, implementation and operation of a multi-modal transportation system, including transitways, roadways, bikeways and pedestrianways.

713.0 Develop a safe, effective network of bicycle and pedestrian facilities.

714.0 Encourage the efficient use of roadways and other existing transportation elements.

720.0 Ensure that the design and use of the transportation system enhances and maintains the environmental quality of the metropolitan area.

722.0 Maintain and enforce acceptable air quality standards.

723.0 Improve the control of transportation related storm water runoff.

730.0 Ensure the relationship between the transportation system and adjacent land uses.

740.0 Provide adequate air transportation facilities.

750.0 Encourage the efficient movement of goods and services by surface transportation within the urban area.

8. Health and Human Services

The citizens of Austin perceive the provision of health and human services as a responsibility of the City equal to the provision of the more traditional services such as physical planning, transportation and parks.

810.0 Improve the planning, management, funding and delivery of health and human services within the City of Austin.

811.0 Develop a comprehensive social policy to guide the development of a comprehensive local health and human services system.

812.0 Expand the City's effort to deliver health and human services.

813.0 Begin immediately to address the specific problems and to consider the specific recommendations which were identified by the Goals Assembly concerning current health and human service programs.

This plan addresses the issues that Austinites of 30 years ago thought needed attention. Its goals and objectives chart a course that the City continues to follow to this day. It is in the policies laid out to implement the goals and objectives that the plan has evolved and grown stronger. In *412.0 Actively pursue programs to promote energy and resource conservation,* the policies stated involved setting a rate structure that promoted energy consumption. The planners of 30 years ago could not foresee that Austin Energy would budget $30 million in 2005 for energy efficiency programs and have more than 120 megawatts of renewable power generation. In the 1970's, no city staffer would have considered creating a program as comprehensive as the S.M.A.R.T. (Safe, Mixed-income, Accessible, Reasonably-priced, Transit-oriented) Housing program which touches on so many of the goals in the plan.

Building on the input of citizens from the middle of the 20th century, Austin moves into the 21st century with a strong commitment to create a city that will provide the same high quality of life to future generations as those in the past have enjoyed.

Our Envision Central Texas Initiative is in the process of developing a consensus plan for future development in the five county Central Texas region. The City is redeveloping the old Robert Mueller Airport, located less than 10 minutes from downtown, into a 700 acre new urbanist community with 4000 residential units and several million square feet of commercial development. In this development, all the electrical energy and district cooling for the commercial properties will be generated on site. All of the buildings at Mueller, both commercial and residential, will be built to Green Building standards.

Much remains to be done, but with a strong history of environmental and social awareness and a committed City government and grassroots support, Austin will continue to be a city that takes the lead in developing a sustainable future.

Resources:

City of Austin ***http://www.ci.austin.tx.us/***
University of Texas ***http://www.utexas.edu/***
Barton Springs Pool ***http://www.ci.austin.tx.us/parks/barton-springs.htm***
South Texas Nuclear Project ***http://www.stpnoc.com/***
Austin Energy ***http://www.austinenergy.com/***
Center for Maximum Potential Building Systems ***http://www.cmpbs.org/***
Austin Energy Green Building Program ***http://www.ci.austin.tx.us/greenbuilder/***
Austin Energy Residential Energy Efficiency Program ***http://www.austinenergy.com/Energy%20Efficiency/resIndex.htm***
Austin Energy Commercial Energy Management Services ***http://www.austinenergy.com/Energy%20Efficiency/commIndex.htm***
Robert Mueller Airport Redevelopment ***http://www.ci.austin.tx.us/mueller/default.htm***
Austin Energy Green Choice ***http://www.austinenergy.com/Energy%20Efficiency/Programs/Green%20Choice/index.htm***
City of Austin Air Quality Program ***http://www.ci.austin.tx.us/airquality/***
EPA ***http://www.epa.gov/***
Early Action Compact ***http://www.ci.austin.tx.us/airquality/early_action.htm***
Austin Water Utility ***http://www.ci.austin.tx.us/water/default.htm***
S.M.A.R.T. Housing ***http://www.ci.austin.tx.us/ahfc/smart.htm***
Envision Central Texas ***http://www.envisioncentraltexas.org/***

Louisville Waterfront Park: The greening of a city

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Louisville Waterfront Development Corporation
www.louisvillewaterfront.com

When the Louisville Waterfront Development Corporation (WDC) was formed in 1986, Louisville's riverfront was dominated by heavy industry, with piles of sand and gravel, huge warehouse buildings, mountains of scrap metal, and petroleum tanks. The Belle of Louisville at its postage-stamp of wharf space was the single public access point to the Ohio River, and even that small space was largely severed from the city core by Interstate 64.

In the years since 1986, the waterfront has been transformed into a vibrant green gathering space, with public access to the river where there had been none for decades. Two phases of Waterfront Park @ more than 72 acres -- have been completed, and the final phase, 13 acres that will include the Big Four Bridge as a pedestrian walkway, will be under construction by late Spring 2005.

The dramatic changes in Louisville's Waterfront have been mirrored in the surrounding neighborhood. Waterfront Park has proved to be an economic stimulus, and the Waterfront District has grown by leaps and bounds. When waterfront redevelopment planning began in 1986, less than 400 people worked in the surrounding neighborhood. Today, there are more than 5,300 employees in the same Waterfront District, and construction is underway on a number of residential and mixed-use projects in the immediate area.

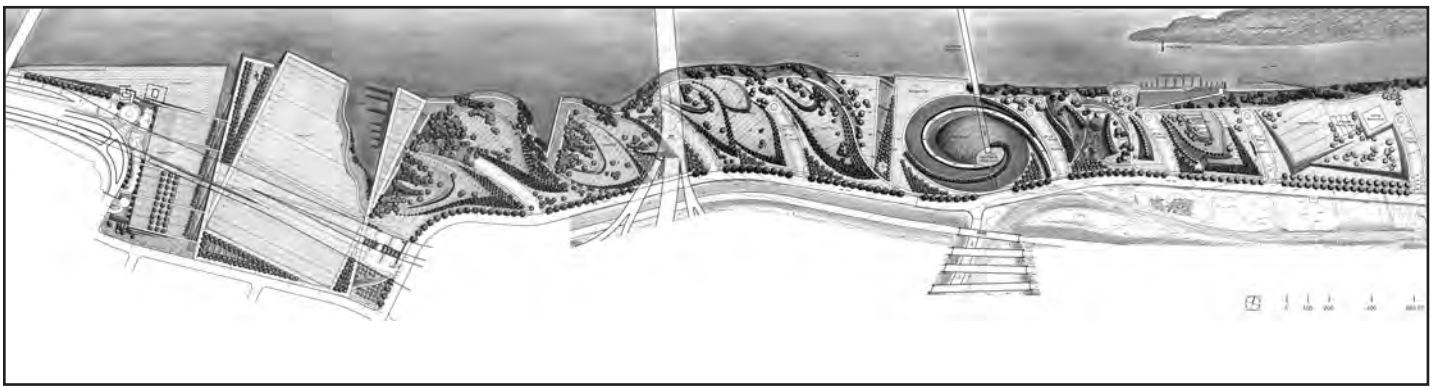
The strategy

The Waterfront Development Corporation was established in 1986 as a non-profit government corporation through an interlocal agreement between the Commonwealth of Kentucky, Jefferson County, and the City of Louisville. Government and community leaders realized that waterfront redevelopment would be a long-term project, and that a partnership between governmental entities and the private sector would help the project transcend any single two- or four-year administration. That strategy proved successful, and the non-profit corporate structure, coupled with a strong public-private partnership, resulted in the creation of the award-winning Waterfront Park and the thriving waterfront neighborhood that exists today.

Several early building blocks set the foundation for riverfront development. An ambitious schedule of property acquisition was begun, and a Waterfront Overlay District with design review guidelines and oversight was implemented. This gave WDC the tools needed to ensure that any new development or changes to existing structures, signage and landscaping in the district would be aesthetically in line with the waterfront vision. An agreement with LG&E resulted in the burial of utility lines along River Road, which made a huge improvement in the appearance of the waterfront area. Finally, the development of the Louisville Waterfront Master Plan provided the roadmap for the design and construction of Waterfront Park.

The Waterfront Master Plan

Between 1988 and 1990, a series of more than a dozen public forums were held in all parts of the community to solicit public input into what the waterfront should become. While a number of interesting ideas and suggestions were made, one overriding central theme emerged @ the waterfront should be a public green space that would serve as a gathering place for the community. A program was developed from the community's wish list, and that program served as the cornerstone of the Waterfront Master Plan.



Archetect's drawing of aireal view of proposed waterfront development.

Redesign work on interstate highway.

In 1990, Mary Bingham, Sally Brown, and David Jones each donated $150,000 to fund the design of the Master Plan. With program in hand, a selection committee made up of community leaders and design professionals began searching for a firm to develop the master plan. More than 100 design firms from all over the world responded to a Request for Qualifications. The selection committee pored over submissions from a list of names that included well-known landscape architects and virtual unknowns. In several steps, the list was whittled down to a final three, which included an up-and-coming firm from San Francisco, Hargreaves Associates, headed up by landscape architect George Hargreaves. The committee was impressed by Hargreaves' sensitivity to the environment and attention to history and place. Hargreaves Associates was selected, and through a process that included another series of public forums and presentations, developed the Louisville Waterfront Master Plan, a design unique to our community that reflected Louisville's embryonic relationship to the Ohio River.

Hargreaves' plan centered on physical, psychological, and visual connections between the park, the river, and the downtown core. It included sites for residential and mixed-used commercial/office development bordering the park, and road improvements that would provide vital linkages to downtown Louisville and surrounding neighborhoods. The Master Plan was adopted by the WDC board and the Board of Aldermen in October 1991.

New building on waterfront property.

The next three years were spent acquiring property, developing the park design, and completing the Environmental Impact Statement, a process necessary to acquire the permits needed from the U.S. Army Corps of Engineers before construction could begin on the project. During this period, another project was started that would have a huge impact on the park, the relocation of River Road from the middle of the park site to its border, and the relocation of the First Street entrance ramp to I-64 west to Second Street. Moving these roadways provided both physical and psychological access to the river that had been missing for so many years, people could finally see the river and feel a connection between the waterfront and the downtown core.

Waterfront Park takes shape

Ground was broken on Waterfront Park's first phase in 1994, and the contours of what would become the Great Lawn and Festival Plaza began to take shape. A new wharf extension was completed, and for the first time, a docking space was available for visiting riverboats such as the Delta Queen and American Queen. The new waterfront was coming to life. By 1996, work began on Linear Park east of the

Belknap Hardware building redesigned for Humana headquarters.. David Jones, CEO of Humana Corp along with Mary Bingham and Sally Brown each donated $150,000 to fund the design of the Master Plan.

Great Lawn, and on the children's play area. Planting began in Linear Park, and with it, the first vestiges of what would become a lush, green oasis in the urban Louisville landscape.

Phase I of Waterfront Park was dedicated on July 4, 1999, and the community celebrated with a free concert on the Great Lawn and fireworks over the Ohio River. The July 4th tradition continues today with the annual Fifth Third Waterfront Independence Festival, which attracts more than 125,000 to the riverfront for the daylong community celebration.

Phase II of the park was dedicated in June 2004, adding 17 acres and a new playground with waterplay, picnic areas, walking paths, lawn areas, tree groves, boat docks, and the Brown-Forman Amphitheater. Construction is scheduled to begin on the last 13 acres of the park in late Spring 2005. Phase III will include a much-anticipated feature, the Big Four Bridge as a pedestrian connection across the Ohio River to Southern Indiana.

Louisville skyline with Phase I waterfront parks in the foreground.

The neighborhood responds

As Waterfront Park continued to develop, so did the neighborhood surrounding the park. Soon after plans for waterfront redevelopment were announced in 1987, the Presbyterian Church USA took a leap of faith and announced plans to locate its headquarters in the Waterfront District. At the time, the area was still largely derelict, and the fact that the community was planning to make major improvements to the Waterfront played a huge part in the church's decision to locate there. Three years later, Humana completed renovation of the old Belknap Hardware building into Humana Waterside, located on Washington Street with a great view of the park and river. The commitment of these two employers brought approximately 4,000 workers to the neighborhood.

As work on the park progressed, the neighborhood continued to prosper. In 1996, plans were announced to locate Louisville Slugger Field across Preston Street from the park on land formerly occupied by a scrap metal business that had relocated to make way for road improvements around the park. The Louisville Ballet moved into its new headquarters on East Main in the Waterfront District. Plans for Waterfront Park Place, a residential high-rise across Witherspoon Street from the park, and Preston Pointe, an office/residential development at Preston and Main, were announced. Work began on Tumbleweed Restaurant in Phase II of the park, which will open in Summer 2005. Connections between the waterfront and the medical center were established and strengthened. By 2005, the impact of Waterfront Park has resulted in more than 5,300 employees in the immediate waterfront area and more than $365 million in investments in both new construction and renovation of existing structures in the waterfront and adjacent portions of downtown Louisville.

Citizens relaxing on the green at waterfront partk.

A new front door to the State

Waterfront Park, lauded by many as "the new front door to the state," has won national and international attention and a number of accolades. The park has received several awards from the American Society of Landscape Architects, including one of five honor awards for design in 2001. In 2003, Waterfront Park received the Phoenix Award Grand Prize for Excellence from the U.S. Environmental Protection Agency, the highest environmental award in the nation. On a more down-to-earth level (literally!), the park was voted "America's Number 1 Lawn for Family Fun" in a national contest sponsored by Briggs & Stratton in 2004. In this pop-

Vista of the waterfront park area with bridges to Indiana in the background.

A crowd enjoying a concert on the great lawn.

Boat marina on the Ohio River.

ular vote contest, Louisville's Waterfront Park beat out nine other lawns, including greenspaces in Chicago, Kansas City, St. Paul, and Columbia, South Carolina. The park has also been featured in a number of national and international publications, including a cover story in "Landscape Architecture" magazine, and features in the Italian publication "i nuovi paessagi" and the international publication "Aquapolis."

Waterfront Park has also served as an example for communities looking for guidance in developing their own riverfronts. WDC staff have consulted with a number of cities, including Memphis, Tennessee; Buffalo, New York; Cincinnati, Ohio; Philadelphia, Pennsylvania; Davenport, Iowa; and Richmond, Virginia.

The community's "neighborhood park"

By any measure, Louisville Waterfront Park has succeeded on a number of levels. One of the most important may well be that the park has been adopted by both visitors to Louisville and residents of every part of the community as their very own "neighborhood park." The park enjoys more than 1.5 million visitors per year for events and daily use. Daily users include walkers and runners, cyclists, picnickers, children playing in the two playgrounds, and downtown officer workers enjoying the piped-in classical music at lunchtime in the amphitheater. Park visitors may join more than 120,000 of their closest friends to celebrate the Fourth of July, or a dozen children for a birthday party in one of the picnic areas. Park events include concerts, art fairs, charity walks, festivals, weddings, car and boat shows, police and fire department safety demonstrations, health fairs . . . the variety is endless, and new events are developed every year as the park continues to prosper in its role as a community gathering place. Waterfront Park is open 365 days per year and is used every one of those days.

View of greenspace in the foreground with new highrise condominium in background.

With 72 acres completed and 13 soon to join them, Waterfront Park has truly accomplished the greening of an urban landscape.

Citizens watching the great steamboat race on the waterfront during Kentucky Derby Week.

Current Waterfront District Businesses

Business Name	*Address*	*Approximate Number of Employees*
Adhawks Advertising & PR	201 E. Main St.	7
bCatalyst LLC	124 North 1st St.	5
Finical Service Solutions (Located in Humana Waterside Blgd.)	101 E. Main St.	375
Bearno's Pizza	131 E. Main St.	28
Bike Louisville	135 River Road	5
Bravura	111 W. Washington St.	17
Burwinkle-Hendershot Co.	127 W. Main St.	7
Community @ E-Main	First & Main	3
Enterprise Corporation	First & Main	8
First Omni Mortgage	301 E. Main St.	48
Genscape	301 E. Main St.	41
Hospital Hospitality House	201 E. Main St.	5
Humana	101 E. Main St.	3325
Icelease Partners (equipment)	124 North 1st St.	5
International Marketing Concept	124 North 1st St.	8
Joe's Crab Shack	131 E. River Road	73
Louisville Ballet	315 E. Main St.	18 Admin., 31 Dancers
Main Street Creation	401 E. Main St.	20
Main Street Realty	111 W. Washington St.	7
Metro Dental Group	301 E. Main St.	11
Old National Bankcorp	333 E. Main St.	18
Oldham Farms Development	111 W. Washington St.	9
OPM Services	111 W. Washington St.	3
Park Federal Credit Union	101 E. Main St.	6
Park Place/Brownings Restaurants	401 E. Main St.	60
Potter & Associates Architects	333 E. Main St.	8
Presbyterian Church USA	100 Witherspoon St.	655
Presbyterian Publishing	100 Witherspoon St.	50
Slugger Field	401 E. Main St.	30 Admin., 200 Seasonal
The Fetzer Company	209 E. Main St.	21
Waterfront Development Corp.	129 E. River Road	16
Other/ Small Businesses		+/- 200
TOTAL		+/- 5300

Note: Figures are estimates obtained through research and conversations with representatives of the businesses listed and Louisville Central Area, Inc. While every attempt was made to verify accuracy, this is not intended as a formal economic study.

Investment in Louisville's Waterfront District

PROJECT	*ADDRESS*	*INVESTMENT* (In millions)	*STATUS*
bCatalyst Corner (renovation)	124 N. First St.	0.80	Completed
Clock Tower Building (renovation)	123 E. Main St.	5.70	Completed
Cobalt 301 East Main Building (renovation)	301 E. Main St.	3.00	Completed
Cobalt Marketplace (renovation)	445 E. Market St.	4.00	Completed
First & Main Garage	100 E. Main St.	8.90	Completed
First & Main Redevelopment	101-119 W. Main St.	19.20	Announced
Fleur-de-Lis LLC Redevelopment	340 E. Main St.	15.00	Underway
Humana Waterside Garage	201 N. Brook St.	8.50	Completed
Icon Properties	Municipal Harbor Area	20.00	Underway
Joe's Crab Shack	131 E. River Rd.	1.70	Completed
Louisville Ballet	311-315 E. Main St.	2.30	Completed
Louisville Extreme Park	601 Franklin St.	2.50	Completed
Louisville Extreme Park (expansion)	601 Franklin St.	1.00	On hold
Louisville RiverWalk	Fourth & River Road	3.50	Completed
Louisville Slugger Field	401 E. Main St.	26.30	Completed
Louisville Wharf (extension)	129 E. River Rd.	1.40	Completed
Marriott Residence Inn	333 E. Market St.	13.50	Underway
Park Place Lofts	400 E. Main St.	5.00	Underway
Petrus Restaurant & Nightclub (renovation)	116 E. Main St.	1.00	Completed
Preston Pointe	333 E. Main St.	11.10	Completed
Romano L. Mazzoli Belvedere Connector	Fourth & River Road	5.30	Completed
Sea Ray of Louisville	1410 Frankfort Ave.	0.80	Completed
The Hub Apartments	300-320 E. Main St.	3.50	Announced
The Mercantile Condominiums	301-311 E. Market St.	7.00	Announced
Tumbleweed Southwest Grill	2301 River Road	3.00	Underway
U of L Rowing Center	Waterfront Park	2.50	
Announced			
Waterfront Infrastructure	N/A	17.43	Completed
Waterfront Park (Phase I)	129 E. River Road	58.00	Completed
Waterfront Park (Phase II)	129 E. River Road	15.00	Completed
Waterfront Park (Phase III)	129 E. River Road	22.00	Announced
Waterfront Park Place	222 E. Witherspoon St.	42.00	Underway
Waterfront Park Place (Phase II)	222 E. Witherspoon St.	6.00	Announced
Waterside Building (renovation)	101 E. Main St.	28.00	Completed
TOTAL		**364.93**	

Note: Figures are estimates obtained through research and conversations with representatives of the businesses listed and Louisville Central Area, Inc. While every attempt was made to verify accuracy, this is not intended as a formal economic study.

WDC/Waterfront Park Timeline

1985	Louisville Waterfront Strategy completed and approved by City and County to serve as a blueprint for riverfront development. It anticipates the creation of WDC.
1986	Waterfront Development Corporation created by interlocal agreement between the Commonwealth of Kentucky, City of Louisville, and Jefferson County.
1987	WDC hires staff and moves into first headquarters on Main Street.
	Mary Bingham donates funds to acquire WDC headquarters on River Road.
	Presbyterian Headquarters USA decides to locate in Waterfront District following community campaign led by David Jones.
1988	Martin Marietta property cleared; 8-acre area paved for used as riverfront Chow Wagon, concerts and other events.
	Wharf extension completed east to Second Street Bridge.
	Power lines buried along River Road.
	WDC hosts a series of more than a dozen public forums to see what the community wants for the waterfront - at the top of the priority list is a park that makes the river accessible to the public.
	Waterfront area is rezoned and WRO design review standards are developed and approved.
	Federal funds are allocated for design of the Belvedere Connector.
	Friends of the Waterfront is formed.
1989	American Commercial Terminal property reclaimed.
	Belknap warehouses north of river road demolished; property seeded and landbanked.
	Search begins for designer for Waterfront Master Plan; design funded by David Jones, Sally Brown and Mary Bingham.
1990	Hargreaves Associates selected as Master Plan designer from field of more than 100 applicants from around the world.
	Another series of public forums held to get feedback from the community and provide update on progress.
	Federal funding allocated for construction of Belvedere Connector.
	Construction begins on the first phase of the RiverWalk.
	Humana Waterside renovation completed.
1992	Private fund raising campaign for Phase I of Waterfront Park begins; chaired by David Jones.
	Waterfront Master Plan wins national Urban Planning Award from the American Society of Landscape Architects.
	First phase of RiverWalk from wharf to 7th Street is dedicated; work begins on second phase - 7th Street to 14th Street.`
	Work begins on Environmental Impact Statement, part of a three-year process to acquire permits from the Corps of Engineers for the Waterfront Master Plan.
1993	More than $14 million in private donations are pledged, matched by $12.5 million from the State.
	Construction begins on the rail relocation in the Municipal Harbor area, which will free land next to the river for development and public use.
	Construction begins on the Belvedere Connector.
1994	Port of Louisville complex demolition is completed.
	Ground is broken for Waterfront Park; mass excavation begins.
	RiverWalk is completed to 23rd Street.
	Belknap Plaza is dedicated by Humana.
1995	Mass excavation is completed; contours of park are visible.
	EIS/Corps permitting process completed.
	Construction begins on marine edge of the park.
	Construction begins on new wharf area.
	Municipal Harbor rail relocation completed.
	Romano L. Mazzoli Belvedere Connector completed.
	American Queen makes inaugural visit to Louisville.

Timeline Continued

1996	Construction begins on Linear Park and Children's Play Area.
	Property south of Waterfront Park in the Waterfront District development area is acquired from LG&E.
	Work begins on relocation of First Street entrance ramp to I-64 to Second Street to make way for the Festival Plaza and Great Lawn.
	Work begins on local road improvements to Washington, Floyd and Brook Streets.
	Planting begins in Linear Park.
	RiverWalk completed to Shawnee Park.
	Kentucky Supreme Court decision on LSM case clears the way for work to begin on the new Witherspoon extension and burial of LG&E transmission lines through the Phase I area.
	New wharf completed, first major piece of Waterfront Park.
	Phase I marine edge work completed.
	Construction begins on Joe's Crab Shack.
	Riverway Terminal donates 5 acres in Phase II area to WDC.
1997	Flood!
	Construction begins on Great Lawn, Festival Plaza, Overlook and Water Feature.
	Waterfront Park hosts its first concert series on the wharf, 10 weeks of pop, rock, county, blues, zydeco and jazz.
	Fourth of July event begins new annual tradition of music and fireworks at the Waterfront.
	Plans announced to locate Louisville Slugger Field in the Waterfront District.
	Second Street entrance ramp to I-64 opens; River Road is re-routed around Waterfront Park.
	Joe's Crab Shack opens for business; becomes one of the most successful locations in the chain.
	Children's Play Area and Linear Park are dedicated and opened to the public.
	Planning begins on Phase II of Waterfront Park.
1998	Great Lawn dedicated, October 18. Festival Plaza and Water Feature completed.
	LG&E removes 6 utility towers and power lines between Third and Clay Street along River Road.
1999	Phase I of Waterfront Park is dedicated on July 4, 1999.
	Gracehoper relocates to Overlook in Waterfront Park.
	Phase II design completed.
2000	Docks installed, Harbor opens.
	Work begins on Waterfront Park Place, residential development called for in Master Plan.
	Corps of Engineers allows pleasure boaters to dock at wharf for first time.
	Widening of River Road from Preston to Beargrass Creek completed.
	Irion property (located in Phase IIA) acquired.
2001	Waterfront Park is one of five national projects to receive the Honor Award for design from the American Society of Landscape Architecture.
	Condemnation filed on Big Four Bridge.
	Construction begins on Phase IIA of Waterfront Park.
2002	Marathon Ashland property acquired.
	Lafarge concrete grain silos demolished.
2003	Waterfront Park receives Phoenix Award Grand Prize for Excellence for brownfields redevelopment, the highest environmental award in the nation.
	Waterfront Park Entry Plaza retrofitted with trees and grass.
	Condemnation filed on Lafarge.
	Marathon Ashland asphalt tanks demolished, site cleared and leveled.
	Work begins on installing pavers in River Road medians.
	Adventure Playground opens to the public, July 21.
2004	Phase II opens on June 10, 2004.

Environmental Education: The Keystone for Green City Initiatives

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Introduction

Environmental Education (EE) is the necessary keystone for developing a Green City. This article examines why this is so, looking at the role EE plays in developing environmental awareness, skills, and motivation to action. All of these are central to sustaining a Green City. One can plan the buildings, design for sustainability, legislate for it, but for these initiatives to be sustained, the general public must support and further these efforts now and in the future. Cities are for people and, presumably, Green Citizens make Green Cities possible through their participation and support. A case study is presented which examines how the public school system in Louisville, Kentucky, has participated in collaborative partnerships with other agencies, resulting in projects that promote sustainability and work toward "greening" the city of Louisville.

Currently, there is a push for community approaches because community members know local issues and conditions (Carr and Halvorsen, 2001). Local knowledge provides economic benefits, as collaborative decisions are less likely to produce adversarial results or law suits. Community members know the local culture and history, which can also positively impact decision-making. Public participation is a key component for local decisions and local solutions; environmental education facilitates understanding of the process of participation through environmental literacy and education into citizenship or participation in environmental decision-making. Partnerships between schools, government, and universities form the basis for a community approach to environmental issues.

JCPS students sharing their find with their teacher. Photo by Jonathan Roberts, JCPS

Defining Environmental Education and its Role in Green Cities

What is environmental education? And what is its place within the planning process for a Green City? All too often education is listed as a necessary strategy for various aspects of planning and implementation of plans once developed, but it is usually listed near the bottom and may be the last item to be paid attention to. This becomes part of a "chicken and egg" circular process, where education is given short shrift and the assumption is that it will "just happen" or that "anyone can do it." With this approach the results range from dismal to isolated spots of success. It then becomes difficult to answer the question: Which came first, the down-playing of the role and lack of importance for education or the ineffectual outcome? For education to fulfill the role it is meant to have (and succeed), environmental education must be respected as a key factor in uniting a wide variety of perspectives, disciplines, stakeholders, and agencies. Each of these may have its own language and culture. EE's unique role is not only providing information but assisting in translating and explaining one language and culture to another. Leopold (Freyfogle, 2000) wrote of the need to "fuse" the two worlds of scholars and people; he saw education as the tool to bridge these worlds. Perceiving increased fragmentation of disciplines, Leopold felt that scholars were often unaware of what the public doesn't know or what they don't understand (Freyfogle, 2000). This understanding is what Orr (1992 and 1994) has termed ecological literacy or education about ecosystems, including human influences and interactions, promoting actions that support sustainability of those systems.

What is the role of citizens in developing green city initiatives? Hungerford and Volk (1990) define an environmentally responsible citizen as one who possesses awareness, concern, knowledge, skills, and who becomes actively involved 'at all levels" working on issues (p. 9). An environmentally responsible citizen is one who exhibits "citizen behavior," as defined by the 1977 Tbilisi Intergovernmental Conference on Environmental Education (Hungerford and Volk, 1990). Developing awareness, concern, knowledge, and skills is the goal of environmental education. Therefore, environmental

education has initiation and maintenance of environmentally responsible actions as its main goal. Environmental education is education into the process of developing citizenship, environmental literacy, and community action.

Environmental education (EE) as a field of study has existed for over three decades. William Stapp is considered one of the founders of EE in this country. In 1969 he defined EE as follows: "Environmental education is aimed at producing a citizenry that is knowledgeable concerning the biophysical environment and its associated problems, aware of how to help solve these problems, and motivated to work toward their solution" (Stapp, et al., 1969, p. 30). Thus, from its beginnings, EE was perceived as a field with both knowledge and motivation to take action as its goals. The type of citizen described by this definition is one who will actively promote the process of creating a sustainable place to live, a Green City.

Many disciplines, especially those of science and public health, have identified education as a key element for bridging the knowledge gap between the general public and professionals. In order to form a broader understanding of the nature of environmental issues, their consequences, and possible solutions, it is necessary to support dialogue and collaboration between a wide variety of fields (economics, psychology, administration, science, architecture, art and the humanities, public health, religion and ethics, education, conservation and natural resources, etc.). EE is based upon an interdisciplinary framework and provides a bridge between the disciplines.

The United States Department of State's statement "Global Issues: Green Cities" (March 2000, Vol. 5, #1) looks at the trend toward increased urbanization. More and more of us each year live in cities. Examining how to make these cities more livable and, in the process, more sustainable is of vital importance. The past 6 years have seen a steady growth of interest in greening urban areas, from urban/community gardens to farmer's markets, outdoor classrooms for schools, and "green cities." David Gordon's book *Green Cities* is now in its second printing and examines how cities can model ecological practices. This book was the first of a trend toward promoting cities as being fertile ground for living sustainably. Vanessa Baird's article "Green Cities" (New Internalist, issue 313, June 1999) proposes a Green City "vision" which has three key components: ecological sustainability, social justice, and a high quality of life for all members of the community. Due to their inherent density of population, cities have the potential for much smaller ecological footprints (the use of resources per person) than the suburbs or even most rural areas.

"A sustainable city cannot be conceived without environmental awareness, social integration, a sustained economy and citizen participation, together in harmonious, dynamic co-evolution" (Mega, 1999).

EE in the Schools: A Case Study in Partnership Development, Louisville, Kentucky

Should large urban school districts care about green cities? Should large urban school districts be involved in promoting environmental education initiatives to green the cities where they are? Both the school district and the green cities movement benefit when the school district is an active participant. The 100,000 plus students of these large urban districts represent and are the future. Listening to these students, we hear a sense of hope and optimism that it is possible to transform how we live while becoming more environmentally sensitive and responsible. In addition to the altruistic values involved, greening schools saves funds, improves the teaching and learning environment, and has a significant impact on student achievement and school culture (The Collaborative for High Performance Schools at http://www.chps.net/; EnergySmart Schools, 2004; and Lieberman/Hoody, 1998)

For the past 15 years, the Jefferson County Public Schools and the University of Louisville have co-directed The Center for Environmental Education. Over the past year, The Center's partners have built upon their previous work by reaching out to formalize relationships with each other and with the community. The resulting relationships materialized into The Partnership for a Green City. The Partnership Project began with the premise that collaboration among key Louisville entities helps address Louisville's challenges in the areas of environmental education, environmental management, and public health. The three partners—Louisville

Dixie Elementary students collecting dandelions for use in an art project. Student rub flowers, leaves, dirt on drawing paper to make their paintings. Photo by Jonathan Roberts, JCPS

Metro Government (Metro Government), the Jefferson County Public School District (JCPS), and the University of Louisville (U of L)—employ 5 percent of the labor market, teach more than 75 percent of the students, own 10 percent of the land, and consume a significant amount of the energy used in the county. These facts make collaboration both a challenge and an opportunity. Coordination and cooperation magnify the results of current environmental efforts and make new projects possible. Even modest progress in green practices will represent an enormous step for the entire Metro area due simply to the large number of persons and resources directly affected.

The Partnership Project Defined:

The three objectives of the project are the following:

- The inclusion and/or furthering of holistic environmental education curricula within JCPS. Research (Lieberman and Hoody, 1998, among others) shows that EE curricula improve standardized test scores and prepare young people for the responsibilities of citizenship and parenthood, responsibilities which increasingly require an understanding of many public issues involving health and the environment.
- The identification of research opportunities to assess the correlation between environmental exposures and health impacts (such as learning disabilities and asthma) that affect student abilities and behavior.
- The identification of strategies for the partners to create sustainable green infrastructures. Building design, energy efficiencies, recycling, solid waste management, and purchasing all are processes which need to be conducted in a sustainable manner.

All three agendas, Environmental Education, Environmental Management, and Environmental Health, are integrally linked and supportive of each other. The work of the partnership is completed through a committee structure. For the first year, the membership of each committee has been restricted to employees of the three agencies in the Partnership to ensure that the work was focused on the particular issue and that the committee had the resources to do the job. The strength of the partnership is that representatives of the three partners work and plan together. Each one contributes and each benefits.

Group Grass: Cane Run Students collecting seeds in their outdoor classrooms for use in their elementary science module investigation. Photo by Jonathan Roberts, JCPS

Environmental Management in the Schools

According to The Collaborative for High Performing Schools (http://www.chps.net/), proper environmental management of a school has a positive impact on student and teacher health, student performance, operating costs, and on the school culture as a whole. Three committees were established to work on Environmental Management issues: energy efficiency, recycling, and buying green.

Energy Efficiency

JCPS spends 11 million dollars a year on electricity and 7 million on natural gas. This amount does not include the 33 million gallons of diesel fuel purchased every year for the bus fleet. According to a study done by Energy Educators, the district could save 55 million dollars over the next 10 years through cultural change alone. The energy efficiency committee is working on developing energy audits, performance-contracting projects, and energy education initiatives. This committee has received several grants from the Kentucky Department of Energy, U. S. EPA, and the U. S. Department of Energy. The largest grant, 1.2 million, will be used to establish a sustainable building center, initially focusing on the use of solar energy in school design.

Recycling

The Jefferson County Public Schools implemented district wide recycling initiatives that have reduced the solid waste management budget by $300,000 annually. Implementing a recycling initiative at each of its 153 schools and the central office reduced the number of dumpster pickups. By diverting recyclable material from landfills, even with the additional cost of recycling pickups, the district is saving money. As a district, JCPS recycles about 100 tons of paper and cardboard each month, which equals 2 million pounds per school year! The number of trees saved is calculated at about 17 trees for each ton of paper and cardboard recycled. Therefore, JCPS is saving about 1,700 trees a month or 17,000 trees during the 10-month school year. For every ton of recycled paper, 24,000 gallons of water are conserved, which totals 2.4 million gallons of water annually. The recycling committee is now expanding its focus to all solid waste issues.

Buying Green

In a school district with 100,000 students, purchases need to be carefully scrutinized.

JCPS purchases large quantities of material. The Jefferson County Public Schools purchases over 300,000 reams of white copy paper, and janitorial cleaning supplies for 153 schools and 15 central office locations. The schools serve 100,000 meals a day, drive over 97,000 miles on the school buses, and have over 15,000 computers. The partnership is building a systemic review process for all purchases. This process will ensure that the district gets the best price, and uses the most environmentally friendly product possible by joint purchasing with the other partners. Plans involve examination of possibilities for sharing equipment and reusing materials, as well as innovative ways to work with surplus supplies.

Environmental Health Issues

Environmental health issues are often issues of environmental justice. In JCPS asthma is the number one cause for absenteeism. Poorer families are more likely to live in areas with greater air pollution. Lead poisoning is another significant environmental problem which also has a greater impact on poorer families. A coalition formed from the university's medical school, the local health department, and JCPS is working on ensuring that school buildings are free of asthma triggers, that the actions of the school district do not increase air pollution, and that there is a rigorous lead poisoning screening system for the students. In February, 2005, the Environmental Health committee worked with the University of Louisville School of Public Health and JCPS to establish a joint tenured position for a director of school health. This director will coordinate research, provide opportunities for U of L medical students to work in JCPS schools, and develop initiatives to ensure the health of students and staff in the school district.

Environmental Education

Two committees were established to promote environmental education in the Partnership for a Green City: Environmental Education (EE) and Outdoor Classrooms.

Environmental Education

The EE committee works to enhance the relationship between environmental education providers in Jefferson County by supporting a joint Center for EE. The center will develop grant applications, engage in cooperative training, ensure that environmental education curricula meet JCPS scope and sequence criteria, create an interdisciplinary network through the Kentucky Institute for the Environment and Sustainable Development (KIESD) and Metro Government agencies, and conduct research.

Outdoor Classrooms

The Center for EE will help schools develop outdoor classrooms through the identification of open spaces, the development of site-based learning, and the provision of the professional development necessary for teachers to be able to use the local environment as a context for learning. Contexts beyond the four walls of a single classroom would include school buildings and campuses, neighborhood parks, and other community public lands and facilities within walking distance of the school. To provide a consistent message, the partners will jointly adopt land stewardship principles and approaches, as well as best-management strategies emphasizing green practices and sustainability. Due to the Partnership's activities, a K-5 environmental education curriculum map has been developed that helps teachers align their outdoor classroom work with the KY Department of Education's Core Content for Assessment; funding has been secured to help eight low-income schools develop their school campuses; a partnership with the local metro-park system has been developed to encourage schools to adopt their local parks; and high school students in a four-year GIS program are producing online and hard copy maps of schoolyards and area parks, and an eight month long professional development initiative for non-formal environmental educators in conjunction with the Kentucky Environmental Education Council will be offered in the summer, 2005.

Establishing the Partnership for a Green City

The Partnership did not grow out of thin air. Since 1990 the University of Louisville and JCPS have jointly sponsored the Center for EE. In 2002 the U. of L./JCPS Center for EE joined with the other seven state universities in KY to form the KY University Partnership for EE (KUPEE). KUPEE works to enhance EE across the Commonwealth of KY. Through a U. S. Department of Education grant to Murray State University, each state university in KY was provided with funds to enhance EE at their university. These funds allowed the EE community to build upon its strengths and grow into a locally focused partnership with a much wider vision.

The relationships that have led to the Partnership Project have a history. Environmental education was the catalyst for the Partnership Project. Over the past 15 years there have been three key areas of focus:

- Student level nurturing and providing opportunity for young people to excel- encouraging excitement about fine-tuning their environmental behavior and becoming active members in their communities and school.
- Teacher professional development and school based/teacher support initiatives
- Policies and systemic curricular initiatives.

Student Level Nurturing: Providing Opportunities

The following projects illustrate environmental education with a focus on student work and initiative.

- Student Clubs: In the late 1990's a fourth grade class at Cane Run Elementary School started a recycling club. While studying the government of Kentucky,

students met with their state representative, Jodi Jenkins. The students brought up the issue of recycling as an issue of concern. Because of this interaction, a bill was drafted and acted upon by the Kentucky State Legislature. The students traveled to Frankfort, the state capital, and made a presentation to the House Committee and then the Senate Agricultural and Natural Resources Committee during discussion of the legislation. As a result of this, every school district in Kentucky is now required to have a recycling plan. Since then, with the support of the Kentucky Pollution Prevention Center and Metro Louisville Solid Waste Division, who conducted Dumpster Dives and completed an intensive waste audit of the district, JCPS allocated $250,000 for initiating a recycling program which currently saves that much every year: a one year pay back for the initial expenditure.

✦**Student Internships**: Also in the late 1990's a high school junior took a year long internship at a state nature preserve and became one of the leaders of Youth Environmentally Aware (YEA). She and her fellow student activists made a presentation at Rio to the Capitals, a Kentucky initiated national conference to follow up the Earth Summit. She met with Governor Jones of Kentucky and his First Lady, Libby Jones, and helped with the process of securing funding for the Kentucky Environmental Education Council. This student was appointed to the Board of The Kentucky Environmental Education Council, becoming the youngest person ever to be appointed to a Kentucky board. Since then, YEA has been transformed into a program for youth leadership by Metro Government and the University of Louisville.

✦**Student Projects:** Students in a Geographic Information Systems (GIS) class developed a traveling show on Lewis and Clark. They printed maps of the expedition's journeys. Each map features different data sets: ecosystems, Native American Tribes, watersheds, mountain ranges. The maps were printed on vinyl; one map was 16 feet by 32 feet which the students can walk on. This map was featured at the Kentucky State Fair and at the Louisville National Signature Event for the 200th anniversary of Lewis and Clark. The map series is now used as a traveling exhibit for Elementary School Libraries. Currently, four schools have a four year career pathway for GIS and all have significant student projects, ranging from using American Forests CityGREEN software to map street trees of Louisville to developing ArcIMS web sites of all metro parks and open spaces in Louisville.

As described by Hart in *Children's Participation* (1977), there are a range of opportunities for student involvement, from manipulation, decoration and tokenism, to young people planning their own programs, and, finally, to young people and adults sharing the decision-making process. Hart used a ladder illustration to describe these levels of participation. He states that if students are going to be involved, the

Students exploring one of Louisville's Metro Parks in a voyager canoe. Photo by John Nation, Louisville Magazine.

program should be designed to maximize the opportunity for any child to choose to participate at the highest level of his or her ability (Hart, p. 42).\

In-depth Content Oriented Professional Development

Ultimately, the quality of teaching and learning in a school district depends on the quality of teachers that work with the students. Providing professional development for teachers must have two concurrent foci: content and instructional strategies plus a holistic understanding of the philosophy of education. The following are examples of in-depth content oriented professional development activities that have these foci.

Lassiter Middle School students in their outdoor classroom amphitheater. Photo by Jonathan Roberts, JCPS

✦**ToxRAP:** This is a national curriculum and professional development initiative of the Environmental and Occupational Health Sciences Institute (EOHSI) Resource Center at Rutgers University. One of the challenges in teacher professional development is keeping the topic fresh, related to and arising out of community concerns, and correlating it with the work that teachers are currently involved in. This approach encourages teachers to develop working relationships with community-based scientists and to increase the role of scientists in the science classrooms. The curriculum must be easy to use and the activities inquiry-based. ToxRAP is such a program. For the past seven years The University of Louisville College of Education and Human Development has offered ToxRAP as a graduate level course. The course is cosponsored by Vanderbilt University Medical School and the U of L Department of Toxicology in the U. of L. Medical School. Students assume the role of environmental health scientists to help the hypothetical Sanchez family discover the cause of their health problems. To do this they conduct a simulated health hazard investigation following the ToxRAP™ Framework and Map that guides them to an explanation: lead-based paint dust was released during renovation work. ToxRAP is now part of the JCPS curriculum for 8th grade science and practical living.

✦**Embedded professional development** on instructional strategies: As a function of developing a more rigorous and aligned curriculum, high stakes accountability, and three-fold increase in committee-oriented requirements, teachers also have increased professional development needs. One of the largest issues in education today is that of time: Time to learn, time to teach, and time to think. For professional development to fully take hold, it must be consistent over a long period of time and be job embedded. For example, at Blackacre State Nature Preserve, Kentucky's first nature preserve and an environmental education center sponsored by JCPS, the Blackacre Foundation Inc. and the Kentucky State Nature Preserves Commission, created initiatives such as The King and Field residences which pair classes at King Elementary, Field Elementary, and Blackacre State Nature Preserve. Students studied the urban/suburban/rural gradient and, through digital photography and student writing using the photos of the community as inspiration, produced a traveling show that was exhibited at the Louisville Zoo's Celebration of Earth Day. The participating teachers honed their skills in the use of technology during the writing process, developing community skills as well. At the same time the program covered required content in social studies core content (community structure and regions of Kentucky).

✦**Using the Environment as an Integrating Context:** Professional development has to be research-based. Decisions about curriculum package choices become especially important. Curriculum developers need to use documented research in the process of creating curricula packages. Education professionals need to know how to assess the value of the curriculum package once developed and the soundness of the research it is based on Choosing a package to implement at a district level requires alignment with state standards, as well as alignment with national EE standards (The North American Association for Environmental Education's guidelines for excellence). Agreement

with and support of the package must come from a variety of levels of educational bureaucracy, funding sources, research based outside of the immediate educational system, and, most importantly, local teacher support. A good example is a recent summer week-long workshop, and continuing collaboration, of Meyzeek Middle School and Farnsley Middle School in the Louisville area. These schools used the Environment as an Integrating Context initiative sponsored by the State Environmental and Education Roundtable (SEER), the Kentucky Environmental Education Council, the Kentucky Department of Education, and the Jefferson County Public Schools. After a week of intensive investigation of schools' needs, as well as community and professional strengths, a team of teachers, administrators, and community and university supporters mapped a strategy for reform. Farnsley chose to focus on three themes for each level at their schools: Water for 6th, Land for 7th, and Air for 8th. Field trips, science fairs, and interdisciplinary units help bring these environmental themes to life at the school. Meyzeek Middle School chose to investigate their community and to develop a community-wide outdoor classroom. The school was active in establishing a seasonal farmers' market where farmers from surrounding rural counties come to sell produce to an underserved urban population. Students work with GLOBE to study the environmental parameters of their community and then compare these to GLOBE sites around the world. They are investigating environmental health issues in their science classrooms and understanding the impact of environmental toxics on human health.

- **The Louisville Urban Environmental Leadership Institute (LUELI):** As a result of an EPA grant, for three years the U of L Center for EE offered a series of leadership institutes for community leaders to help them understand environmental issues in the community. The institutes were comprised of a series of workshops on environmental issues facing the community. All topics were presented from academic, regulatory, and community perspectives. Efforts were made to attract community leaders who were not already active in environmental issues. Research found that using a local focus, as well as use of an experiential education approach for the Institute promoted increased understanding of local issues, empathy with diverse populations, information retention, and motivation to act (Cairns, unpublished dissertation, 2001). The good news is that LUELI worked. It promoted environmental leadership and stewardship. However, due to lack of long-term funding, the Institute has not been continued.

Policies and Systemic Curricular Initiatives

While individual student or class projects and enhancing professional development are important, to change a system, work must also be done at a system level. Three examples of such work are the development of Curriculum and Assessment Maps, the adoption of an environmental goal for all schools, and the establishment of board approved long-term partnerships with community and state agencies.

- **Curriculum and Assessment Maps:** JCPS has just published a K-5 environmental education curriculum map that is integrated with the district's curriculum. In this era of high stakes accountability and a high mobility rate of its students, JCPS has adopted tight curriculum and assessment pacing schedules. The District Map essentially describes content area foci week by week for each grade level. By identifying environmental education strategies that support the week-by-week curriculum, teachers can fully integrate activities on their school campuses, local open spaces, and environmental field trip programs in a systemic manner. In addition to providing teachers with specific strategies, the environmental education curriculum map builds support with the building administrators who need to ensure that the student work is focused on "testable material".

- **Partnerships with the Community:** Most urban school districts do not have the financial resources to develop community-based initiatives, and initiatives of community organizations tend to change over time, often from year-to-year. This makes it difficult to develop and implement system initiatives. Central office and school board politics often create a hectic, frenetic pace for administration. Often by the time a community initiative is recognized by district staff, it is already losing steam. To address this problem, long standing relationships must be established and recognized by the Board of Education. One example of such a relationship is the 25 year one between the Kentucky State Nature Preserves Commission, the Blackacre Foundation Inc., and JCPS in maintaining Blackacre State Nature Preserve, which is used by teachers and students. Long-term relationships between diverse agencies are not easy to sustain and require constant attention. However, in the long term such relationships build a foundation for sustainable change.

- Career Pathways: As a result of JCPS, U of L, and Metro Louisville involvement, a four year career pathway in Geographic Information Systems (GIS) has been established. Doss High School currently has a fully developed four year program. Three other schools are implementing GIS courses as a component of other career pathways. The career pathway system allows teachers to fully implement content over a

series of courses, culminating with a community based internship.

Challenges for EE and the Partnership for a Green City Project

The Partnership has only been in existence for six months, but much has been accomplished and much remains to be done. An action agenda has been created for the Jefferson County Public Schools' environmental education piece of the Partnership. The action agenda includes the following: working with community organizations to develop after-school environmental education opportunities; ideas for research that is meaningful on local, state, and national levels, linking researchers to the classroom; exploring the connection between environmental health and justice issues and achievement gaps for students; exploring the interaction between open space/environment and behavior; and ensuring that all segments of the population have access to quality environmental education in the schools and in the community.

The achievement gap between blacks and whites is one of the most urgent problems in urban school districts. Minority populations bear the brunt of most environmental problems. The poor must allocate more of their resources toward energy, heating, electricity, water, and gas, than wealthier families do. Much environmental education has not been inclusive and needs to address these issues more specifically in the future.

Research is an important focus for any action agenda. We need to know the impact of EE programs on students and their achievement, of professional development initiatives on teachers, and of community EE on the understanding of participation in and stewardship of the environment. Research is part of what must be a sustainable, long-term approach that involves planning, implementation, continuous evaluation, restructuring, further evaluation, in an on-going circular process.

There has been a focus on technological "fixes" for environmental problems, which needs broadening to include non-technological "fixes" such as environmental education. The notion that we can solve a problem without the cooperation or participation of the community members must be transformed into a true partnership where architects, engineers, teachers, and students can all sit down and discuss the problems, while learning together and developing collaborative relationships.

Programs must be sustainable. Many of the examples presented in this case study were funded by soft money. When the funding ran out, the program ended. The Louisville Urban Environmental Leadership Institute is one such example. School change, community change, and behavior change are long-term processes. Environmental education has been driven by small grants that often build expectations which are activity driven, when the real need is for systemic initiatives that are sustainable over the long haul. An example of just such a systemic initiative, and one which needs to be sustained long-term, is the role of EE in the community.

EE in the Community

Environmental education is sometimes assumed to only focus on education within school systems. Young people are, indeed, the future and the concept of sustainability is to plan and use resources so that we are not robbing from future generations. Sustainability also means ensuring that projects, designs, plans, etc. are self-perpetuating, that they can grow and live on into the future. Our youth are the ones who will be inheriting not only the physical planet but the partnerships and relationships we establish now. To establish those partnerships, however, the level of environmental literacy among adults must be raised. Environmental education in the community can be seen as having two major thrusts:

1. increased environmental literacy in all sectors (schools, government, policy makers, academia, public and private agencies, and the "general public") and
2. education into democracy or education for participation, which also involves all sectors.

Environmental Literacy

Environmental literacy has been much discussed in EE literature. Orr (1992), who is one of the premier writers covering this subject, uses Hardin's definition from the 1970's. He states that environmental literacy is the ability to ask the question: "what then?" It is increasingly clear that merely presenting people with "the facts" from scientific fields has not been sufficient. We are constantly bombarded with information about global warming, the greenhouse effect, ozone depletion, species loss and decline, habitat loss, the effects of sprawl to name a few. Sometimes people aren't sure who to believe or what to do.

In their "Eighth Annual Report Card" of December 1999, the National Environmental Education and Training Foundation (NEETF) gave adults in the United States an "A+" and an "A" for attitudinal measures on environmental issues but an "F" and a "D+" in knowledge areas. World Watch, an environmental watchdog organization that tracks changes year-to-year, states that the environmental illiteracy of adults has actually increased slightly since the first Earth Day in 1970 (Vital Signs 2001). This funding suggests that although the amount of information is growing exponentially, environmental literacy is not.

EE has a major role in exploring effective ways to increase environmental literacy in the public sector. EE also has a role in connecting a wide variety of disciplines with each other, acting as translator both from discipline to discipline, as well as from academic researchers to the general public.

Lassiter Middle School students investigating their pond on their school campus. Photo by Jonathan Roberts, JCPS

Public Participation

Programs, policies, and plans are not sustainable without support from a variety of arenas, including the very important one of the citizens in the community or city or region. Public participation and green cities are part of a world-wide culture change, a paradigm shift to fostering sustainable urban areas.

> The idea of sustainability includes not only environmental awareness and a sustained economy, but also, and more important, social integration and new ways of governing cities that will include a participative role for every citizen (which explains our preference for the term "social sustainability").
>
> Mega (1999)

Kemmis (1990) points out the importance of beginning to "practice" participation, which may be new to both community members and to other sectors, such as agencies and academics. He feels that lack of interaction of people with differences leads to increased opposition and decreased realization of their common ground and common interests. Our current political system pits "sides" against each other, creating hostility, frustration, withdrawal, and deadlocks or lawsuits. Interaction can breed understanding and begins to build relationships which are sustainable. When citizens participate and are heard, they provide valuable local knowledge which is vital to augment scientific knowledge. Local knowledge often contains information not available through scientific methods (Fischer, 2000). This information may include cultural background, a sense of history and importance or value, as well as social constructs involving ethics and spiritual perspectives. Citizens and experts combine to form an "interpretive community" (Fischer, 2000, p. 253) of professional and personal understanding.

This approach lends itself well to research, with a growing trend toward "community-based participatory research" (NIEHS, 2000). This innovative research model is based upon recognition of the importance of place and community, uses the resources and strengths of the community, encourages collaboration and partnerships of all stakeholders, and "integrates knowledge and intervention for mutual benefit of all partners" (NIEHS, p. 18). Process is more important than end results; there is a shift of power with an emphasis on equality of partnerships and respect for all perspectives. Bryan (1996) divides social impact assessment into two types: the technocratic-research model (the traditional approach in the USA) and participatory-planning (the model being used in parts of Europe and surfacing in the USA). The first approach is top-down and leads to conflict and resistance. The second emphasizes partnerships between community and "experts;" this approach is interdisciplinary and inclusive.

In moving toward sustainable or "green" cities, the emphasis needs to be on the process, rather than product. Prugh, Costanza, and Daly (2000) argue that our current system is adversarial, increases the potential for conflict, and doesn't invite or educate people to participate in meaningful dialogue. They term this "thin democracy" (p. 103) and state "(e)ven well-intentioned people imagine that they can somehow phone in their contributions to a sustainable society. American popular environmentalism is a mile wide and an inch deep, and our grasp of the contribution we make to environmental problems is generally superficial" (p. 90). The authors examined several urban cities in the United States that have been working to increase citizen participation and found that they enjoyed "long-term success with face-to-face democracy" (p. 151). The study found that there still was not broad-based public participation in these cities but that the process of participation, although time consuming, increased tolerance, decreased conflict, and increased a sense of community. Environmental education includes education about the why and how of public participation, about the benefits of the process. The audience for this component of EE includes professionals from all disciplines involved, governmental personnel, schools, and community: all the threads that unite to weave what Orr calls "the vessel of community" (Orr, 1993, p. 9).

Conclusion

Environmental education is education about place, about resources, and about relationships and process. "The goal is

to teach about the world, through the lens of one's community and region, while at the same time instilling a sense of love and caring about the places in which we actually live" (Beatley and Manning, 1997, p. 197). Caring for one's place is part of sustainability. Caring is an active process; it involves taking action. Through building partnerships- businesses, environmental groups, schools, religious communities, government agencies, academic disciplines, and community members- one develops a rich variety of perspectives and depth of knowledge, both key to taking productive action. Environmental education includes education into the partnership process, as well as education for the environmental literacy needed at all levels to understand environmental issues.

World-wide, countries and regions are examining their urban areas with a view toward making them sustainable, livable, and dynamic. Green cities can have a smaller ecological footprint (or use of resources) than do suburban and rural areas due to the numbers of people sharing resources. "Sterile cities stagnate, fertile cities progress" (Mega, p. 3). Green cities are fertile cities.

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Green Building Comes to Bernheim

Dave Imbrogno
Director of the Bernheim Arboretum and Research Forest

Bernheim Arboretum and Research Forest, located 25 miles south of Louisville in Clermont, Kentucky, is a 14,000-acre property dedicated to connecting people and nature by finding new ways to connect nature with people's everyday lives. We believe that if people recognize and benefit from the many values found in nature, quality of life will be improved, and thus they will be motivated to protect the natural world for both its practical and its intrinsic value.

Toward this end, Bernheim works to preserve and restore natural habitats through stewardship and research and to promote healthy natural and managed landscapes through our education and arts programs. Bernheim's new Visitor Cente opened on April 9, 2005, and is the portal through which visitors can begin their Bernheim experience. This remarkable building reflects Bernheim's mission by being a sustainably-built structure that we hope will achieve the highest level of certification by the U.S. Green Building Council's LEED (Leadership in Energy and Environmental Design) rating system.

What is "green building?"

The term "green building" refers to designing, constructing, and operating buildings and landscapes to incorporate energy efficiency, water conservation, waste minimization, pollution prevention, resource-efficient materials, and indoor environmental quality in all phases of a building's life. These practices not only conserve valuable natural resources, they also provide economic and health benefits to building owners, occupants, and the community at large.

What is "LEED?"

The LEED Green Building Rating System(tm) is a voluntary national standard for developing high-performance, sustainable buildings. Members of the U.S. Green Building Council developed LEED to define "green building" by establishing a common standard of measurement.

The LEED System is a feature-oriented rating system where credits are earned for satisfying specified criteria. The five major environmental categories of review include:

New vistor's center at Bernheim Forest designated as a "green" building.

Sustainable Sites, Water Efficiency, Energy and Atmosphere, Materials and Resources, and Indoor Environmental Quality. Silver, Gold, and Platinum levels of green building certification are awarded based on the total credits earned. The LEED standard has been adopted nationwide by federal agencies, state and local governments, and interested private organizations as the guideline for sustainable building.

What are some of the key "green" features of Bernheim's new visitor center?

Bernheim's goal is to achieve the Platinum-level certification for the new Visitor Center. Some of the key "green" features of the building include:

1) *Use of recycled materials.* Many of the materials used in the construction of the building are recycled. Virtually all of the wood is either cypress recovered from pickle and vinegar vats owned by The Heinz Company or native woods from old bourbon whiskey rack houses donated by Jim Beam and Brown-Forman. The floor is made of recycled concrete with fly ash added, and the copper in the gutters and flashing is recycled. Old newspapers are recycled as insulation material, and the drain pipe throughout the building and landscape is made from recycled plastic.

2) *Peat-based water treatment.* One of only a few such systems in Kentucky, wastewater from the building filters through peat moss before passing into a small lateral field. The filtered water is 96% - 98% pure, and can be used for irrigation and can even be discharged into moving water. The system requires a much smaller septic tank, a lateral field half the size of a conventional field, and releases much cleaner water into the environment.

3) *Green roof system.* Green roofs have been widely used in central Europe but are only slowly gaining acceptance in the U.S. The Visitor Center roof will be covered with 5" inches of a sand/organic mixture that is planted with hardy plants such as widow's cross, stonecrop, and prickly pear. There are many benefits to a green roof, including energy conservation (they are excellent insulators), minimizing water runoff, durability, relatively low cost, and low maintenance requirements.

4) *Geothermal heating and cooling.* A special antifreeze solution is circulated through fourteen wells, each drilled 300 feet deep. This maintains the antifreeze at a constant 55° temperature year round. In summer, outside air is drawn across a heat exchanger and cooled by this antifreeze solution; in winter, outside air is heated to this temperature by the heat exchanger, before additional heat is added. These strategies greatly reduce the cost of conditioning the air in the building.

5) *Use of passive solar radiation.* The building is designed and situated in the landscape to make maximum use of the effects of solar radiation. In summer, when the sun is high in the sky, it shines down at a higher angle, and the large roof overhangs largely shade the interior of the building from direct sunlight. In winter, when the sun is lower in the sky, sunlight can shine through the windows into the interior of the building, heating the concrete floor which radiates the heat naturally into the building.

What are the benefits to Bernheim of building a green building?

The visitor center evokes the visual and functional cycles of the trees and plants that define Bernheim—by creating oxygen, sequestering carbon, creating habitat, providing shade from the summer sun and shelter from winter winds, changing with the days and season, and inspiring delight. It supports our mission of connecting people to nature and serves as a portal into Bernheim and the many things to do here. The building will also use fewer resources to operate, be easier and less expensive to maintain, and when the time comes to dismantle it, it will be almost completely recyclable.

What are the benefits to visitors and the community of the green building techniques?

Bernheim's visitor center will serve as a model of green building techniques that can be used in other buildings, both new and existing, throughout the region. Bernheim will document and interpret the benefits of the different features and will work with architects, builders, and homeowners to share ideas of ways that they can realize economic and environmental benefits by building "green."

Children as Allies in Creating Sustainable Cities

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Child-friendly Cities are People-friendly Cities

Imagine a city composed of communities with well defined boundaries and a positive sense of identity that residents express through activities like local festivals, athletic events, music and art. A city where people feel safe and free to move about among a variety of settings where they can meet friends, play, shop, observe and explore. A city with trees and green spaces, both large and small. A city where people of all ages and ethnic groups feel welcome and valued, where there is a tradition of self-help associations that enable residents to work together to progressively raise their quality of life. A city where everyone is assured a secure home and provision for basic needs like food, water, electricity, education, medical care and sanitation.

Does this sound like a dream of utopian theorists? In fact, these are indicators of good city quality according to 10 to 14 year olds at more than 30 low-income urban sites around the world, who documented their communities as part of the Growing Up in Cities project of UNESCO (Chawla 2002; www/unesco/most/growing.htm). On these criteria, young people from six continents have shown remarkable consensus. Above all, these young adolescents speak about their desire for social integration—to feel welcomed by adults in their communities and to feel safe and free to move about among interesting things to do and places to find friends. In addition, they are ready to recommend specific, feasible actions that would help realize their goals. Their views substantiate the principle that "child-friendly cities are people-friendly cities," and if city leaders strove to meet these standards for good places in which to grow up, they would take giant strides toward creating sustainable settlements as well.

The Growing Up in Cities project was conceived in 1970 by Kevin Lynch, a professor of urban design at M.I.T., as a contribution to the new Man and His Environment Programme of UNESCO. The mission of this program remains radical to this day. Faced by smog shrouded cities, rivers afire with oil slicks, and the other environmental catastrophes that motivated the first Earth Day in 1970, the program proposed the following focus:

> The focus will be on man as a whole, the creation of favourable social relationships in a human environment, the prevention of alienation and attention to social and mental health on the community scale. The positive aspects of man's control of his environment will be explored with a view towards determining the most effective means of achieving a design for living that would encourage the pursuit of beauty and the enhancement of dignity in human relationships. (UNESCO 1970: 1).

David Orr (1992) has noted that there are two competing visions of sustainability. One, which he terms "technological sustainability," is based on a belief that sustainable relations with the environment will be engineered by experts in technology and economics, and for that reason, other citizens only need to be receptive to these expert decisions. According to another view, which Orr terms "ecological sustainability," citizens need to be active and well-informed so that they can review expert recommendations and contribute their own initiatives to achieve the best possible quality of life for all. Neither the words "sustainability" nor "environmental justice" were in the air in 1970, yet the social scientists, architects and urban planners who launched the Man and His Environment Programme evidently believed that the solution for environmental problems begins with social relations that empower citizens to create places that nurture human development. This view anticipates Orr's conception of "ecological sustainability," at the same time as it points toward an awareness that is still emerging of links between people's social and mental health and the ecological health of communities.

Lynch convinced UNESCO that it was important to understand the conditions that make cities favorable places from children's perspectives. His belief in the value of children's contributions may stem from his own experience as a student at the Parker School in Chicago, a progressive elementary and high school that practiced "learning by doing." In an interview with the geographer Anne Buttimer near the end of his life, Lynch observed that he learned the most important skills in life at this school. This endorsement needs to be placed in the context that he subsequently graduated from Yale University and then studied with the architect Frank Lloyd Wright at Taliesin West.

The problem was that Lynch's view of children's potential was a generation ahead of its time. He coordinated Growing Up in Cities sites in Australia, Poland, Argentina and Mexico, where 10 to 14 year olds documented how they used and evaluated their communities; and on this basis, he drew up a list of recommendations that urban planners and municipal officials should follow for young people's sake. At the different project locations, site directors tried to bring their work to officials' attention. City fathers, however, showed no interest. The most that Lynch could achieve was to gather the reports

and his resulting recommendations into a book that remains a classic in research on children and the environment (Lynch 1977).

Then came the Convention on the Rights of the Child. Adopted by the United Nations in 1989, the Convention contains 54 articles that identify children's rights to protection from harm, provision of the resources that they need for healthy development, and participation in decisions that affect their lives. Guidelines for the interpretation of the Convention explicitly state that children need to be consulted regarding decisions that affect their environment (Hodgkin and Newell 2002). Building on the Convention, *Agenda 21* (the Programme of Action that emerged from the Earth Summit in 1992), and the *Habitat Agenda* (from the Second United Nations Summit on Human Settlements in 1996) both identify children and youth as important actors in participatory processes for sustainable development. The Convention has stimulated a new interest in children as agents in their communities rather than just passive recipients of aid. Because Growing Up in Cities provides a means to implement this approach, UNESCO readopted the project in 1996, working in collaboration with numerous other organizations.

Figure 1. Growing Up in Cities documents children's views of their environment and ways to improve it in settings with special policy significance: in this case, a squatter camp in Johannesburg, South Africa. Photo courtesy Louise Chawla.

With Somalia, the United States is one of only two member states of the United Nations which have not ratified the Convention on the Rights of the Child. Nevertheless, it has signed *Agenda 21* and the *Habitat Agenda,* which advocate involving young people in participatory processes of environmental decision-making. As the Preamble to the Habitat Agenda states:

> The needs of children and youth, particularly with regard to their living environment, have to be taken fully into account. Special attention needs to be paid to the participatory processes dealing with the shaping of cities, towns and neighbourhoods; this is in order to secure the living conditions of children and of youth and to make use of their insight, creativity and thoughts on the environment. (paragraph 13)

Even the United States, which has failed to ratify the Convention, has committed itself to work toward these goals and similar goals contained in *Agenda 21*; and nothing prevents individual cities and civic organizations from seeking to implement children's rights.

As city leaders and community-based organizations around the world have sought ways to respond to the mandate to include young people in decision making, a spreading network of cities have adopted Growing Up in Cities initiatives. The project was simultaneously revived in Australia, Argentina, England, Norway, Poland, India, South Africa, and the United States. Since that time, sites have been added in Venezuela, Sweden, Lebanon, Jordan, Papua New Guinea, the Cook Islands and Vietnam. Currently, a network of five sites is underway across Canada and a coordinated set of six sites is gearing up in the city of New York.

Processes to Engage Young People's Insight and Energy

Case studies of the project's initial revival in eight countries have been presented in the book *Growing Up in an Urbanising World* (Chawla 2002). An accompanying manual, *Creating Better Cities with Children and Youth* (Driskell 2002), details the steps that city agencies, nonprofit organizations and activist researchers can take if they want to engage young people in similar processes. Because urban changes always involve multiple stakeholders, the fundamental principle underlying successful sites is *partnership,* and the fundamental rule is *"Network, network, network."* Young people are most likely to commit themselves to democratic action when they see that they have the power to change their world for the better, and therefore project facilitators have an obligation to ensure that at least some of the participants' priorities will be carried forward.

One way to do this is to assemble a network of influential adults who are prepared to facilitate project goals. This can be done through a Project Coordinating Team who will oversee strategies and start-up activities, and later in the process, respond to issues that arise and support the implementation of young people's ideas. At the core, there should be represen-

tatives of the staff who will manage day-to-day activities and the child or youth groups who will be involved. Local allies who have a lasting investment in community quality for children should also be included, such as parents, teachers or leaders of child-advocacy organizations. As members of this team or a larger Advisory Committee, people who can pull strings to make things happen, or who bring valuable special skills, should also be enlisted. These include local government representatives such as municipal planning staff, local councilors, and youth advocates; architects and planning professionals; photographers; journalists; university researchers and their students; people from local development agencies, the business community, or trade unions; and people with funding connections.

The goal of Growing Up in Cities is not only to improve the quality of life for young people in particular localities, but to raise awareness city-wide about issues that young people face. Therefore it seeks to create model sites and then publicize results broadly, using newspaper, radio and TV stories, articles in popular magazines and scholarly journals, public workshops and events, videos, websites, and photo exhibits. For this reason, university researchers, artists, designers and media people are important members of the team.

To attract attention and resources and ensure the project's relevance, each site needs to be selected strategically. This choice might be dictated by the lead organization's mission or the agenda of a city agency, or might focus on areas with special policy significance. For example, Growing Up in Cities was introduced in a squatter camp in Johannesburg because little was known about children's lives under these conditions, yet informal settlements of this kind were springing up around the city. In Oakland, California, it focused on young Cambodians and Mexicans in a city with a large immigrant population. In Amman, Jordan, the focus was children of Palestinian refugees. In each case, an effort was made to locate children who could inform policy makers about the risks that a vulnerable population faced, their priorities to improve their lives, and existing community resources that improvements could build upon. It is also critical to select a site where there are many supportive partners who can help ensure that at least some of the children's ideas will be realized.

Because Growing Up in Cities is an action-research project that seeks to document trustworthy findings that can inform community planning and urban policy, university researchers have played a lead role at most sites. Given the interdisciplinary nature of environmental issues, they have represented a variety of disciplines: architecture, planning, geography, anthropology, psychology and education. Lynch recommended that each team should include a "space person" (architect, planner or geographer) and someone with social research skills, and this has proved to be a particularly effective combination. Other partners usually come from the community, such as teachers, social workers, or staff at local organizations that serve community development or youth. Undergraduate and graduate students have played a key role at a number of sites by adopting the project as their fieldwork for an internship, masters thesis, or dissertation.

Fig. 2. After children draw the area around where they live, their drawing forms the jumping-off point for an interview which explores how they use and evaluate their environment--as at this Growing Up in Cities site in Bangalore, India. Photo courtesy David Driskell.

Once basic logistics have been planned regarding goals, funding, staffing, and scheduling, a series of activities ground the work in a solid knowledge of the chosen area. For this purpose, both structured and informal observations are invaluable. Maps of all kinds are collected, to understand the area geographically and historically, and where they are missing, nearby classes of architecture or planning are enlisted to create them. They form a base to later record young people's territories and the resources and risks that they perceive in their locality. With an aerial map in hand, a useful technique is the photogrid. Project staff lay a transparent grid over the map, and then move through the community, shooting photographs at each grid intersection, with a focus on information especially relevant to young people, such as barriers, attractions, and signs of young people's play and work. As well as documenting the study area systematically, these photographs form a historic record of community hazards, barriers and resources for young people at one moment in time.

Another systematic method of observation is behavior mapping, which records the choreography of people and their movements through public spaces during a chosen period of time. It serves to document how young people interact with each other and other age groups at important gathering places, and to identify who uses this space and who is absent. Effective as these formal methods of observation are, however, project staff have learned to never underestimate the power of the simple practice of "hanging out." By spending time in the streets, public spaces, and institutions of the locality, keeping their eyes and ears open, they begin to understand different groups within the community, local politics, the forces that shape young people's lives, and who can be allies in moving the project forward. At the same time, peo-

ple in the community get to know the project team, ask questions, and reassure themselves that the project really is intended to serve the community and its children. To increase this kind of exchange, a playful method of observation is framing, which consists of walking around the area with a big picture frame, asking a partner to stop whenever he sees something significant and to shoot a photo through the frame. This process invariably leads to conversations with children and adults standing nearby, which gives team members a chance to explain the project and gather information about the activity or setting that they have just recorded. During this period, local stakeholders are also interviewed about their perception of the urban issues that young people face.

While this background is being documented, steps are underway to identify the key populations that the project will work with and allies who can help ensure success. For example, work with the squatter camp children in Johannesburg began during several visits with parents and camp leaders, culminating in a formal presentation of the project to a circle of elders. Given their endorsement, project leaders were then free to meet with parents and children, explaining the project again and gathering children who volunteered, with their parents' approval. When the base is a school, this time is spent identifying teachers who are willing to build a curriculum around project activities and gaining the support of administrators, parents and students. When a local agency or community-based organization takes the lead, staff need to be trained and children and parents need opportunities to ask questions and come on board.

All of the project sites have shared a core set of activities to engage young people in documenting and evaluating their localities and identifying their priorities to improve where they live. All participants have drawn maps of their area and marked places that they know on it. This drawing then becomes the focus of an interview, in which children explain the range of places that they use, whether they travel alone or with others, family rules that govern their use of the environment, what they do in these settings, and how they feel about these places. They also describe their schedules on a typical weekday and weekend. The issues that surface then become the subject for focus group discussions or role plays, and small groups of participants take the project team on walking tours to show them the places they are talking about.

Fig. 3 In Frankston, Australia, young people in eight neighborhoods investigated their peers' perceptions of safety issues in their city and drew up recommendations which were then integrated into a citywide Safety Management Plan. Photo courtesy Karen Malone.

Many site teams have also sent young people out with cameras to document their routes through their community, their favorite places, and problem areas. Just as they explained their drawings, they discuss the photographs or write commentaries. Participants can record the results of these methods on a big wall map of the area, using symbols to distinguish the categories of places that emerge, such as dangerous, boring, peaceful, exciting or friendly places, and using colors to distinguish the choices of boys and girls. In this way, young people create a collective map of local problems and assets for their gender and age group.

The next step is visioning and identifying priorities for action. In most cultures, it works best to start this process with separate groups of boys and girls, and to then have the different groups share their results and combine their ideas. When there is a wide range of ages, younger and older children may also need to work separately at first. At this stage, young people can express their ideas for community improvements through maps, drawings, models, collage or any variety of creative media. At some sites, they have worked with a filmmaker to compose a video.

During these processes, a rich collection of visual material and expressive statements are gathered. At this point, it is important to communicate about the project to as wide an audience as possible. At many sites, young people have mounted public exhibits of their work and presented their documentation and ideas in a public forum, where parents, local community leaders, city officials, and staff of organizations that serve children listen and then draft plans to address the priorities that the young people identify. In South Africa, where stark gaps between rich and poor can leave children of privilege as well as disadvantaged children baffled about how to solve problems, one site focused on bringing inner-city children together with suburban members of a Junior Council to brainstorm and work together to achieve some of the inner-city children's goals. At a number of sites, these public exhibits and meetings have become the focus of newspaper stories, television spots and radio programs, serving to educate the public at large about urban issues that young people face and presenting young people as resources who can contribute to solutions.

Moving from Ideas to Action

According to the Convention on the Rights of the Child, "In all actions concerning children, whether undertaken by public or private social welfare institutions, courts of law,

administrative bodies or legislative bodies, the best interests of the child shall be a primary consideration" (Article 3). Given the broad swath of decisions that concern children, even when they are not directly about children, this principle has far reaching implications, and the United Nations Committee on the Rights of the Child has chosen to interpret it broadly. In the arena of urban government, this statement means that when a permitting agency is reviewing a proposal to build a new waste disposal plant, the best interests of the children who will be exposed to its emissions should be a primary consideration. At a minimum, this means not siting the plant in a residential area. More farsightedly, it points to the need for recycling and "cradle to cradle" closed-loop manufacturing that avoids creating waste in the first place (McDonough and Braungart 2002). The same rule applies when city officials debate whether to widen a highway or increase public transportation. The best interests of children, who are especially vulnerable victims of asthma and traffic injuries and fatalities, point in the direction of public transportation. In practice, children cannot vote and politicians are pulled in other directions by louder and more powerful constituencies; but if decision-makers kept children's best interests in mind, they would choose the most sustainable paths, because sustainability is about a livable future--and that is children's ultimate interest too.

Even cash-strapped city governments can invest their limited resources in ways that make a major difference in the quality of children's lives, as the book Cities for Children, prepared for UNICEF, demonstrates (Bartlett et al. 1999). Enrique PeZalosa, the first in a line of visionary mayors in Bogota, Columbia, declared that, "The measure of a good city is one where a child on a tricycle or bicycle can safely go anywhere" (Walljasper 2004: 57). Pursuing this goal has required reclaiming streets for pedestrians and bicyclists, establishing a network of new parks, and building and renovating schools. All these steps create a more sustainable city as well. As PeZalosa added, "If a city is good for children, it will be good for everybody else" (p. 57).

Unfortunately, there are not enough urban officials like PeZalosa. The greatest challenge that Growing Up in Cities faces is to get adults in power to respond to young people's ideas. When participants in the project prioritize their ideas to improve their localities, the next step is to allocate responsibility. Typically, some suggestions are in the power of the children themselves, their parents, and local community leaders to realize. Without outside support, they can set to work right away: for example, cleaning up a trash-strewn lot and organizing a neighborhood watch to monitor it so that children can use it for play. It is important to identify steps like this so that children can see that they have the ability to influence their world for the better. Through "mastery experiences" of this kind--where children set goals that they themselves judge to be significant and see that they are able to achieve them—they build a sense of competence (Bandura 1997).

Other priorities that emerge from the project are clearly the obligation of city government—such as regular trash collection or more neighborhood policing. When urban officials are accustomed to dismissing the needs of the poor, they may be quick to take advantage of the photo opportunity of lining up with a group of low-income children who want to make their community a better place, but much slower to make good on their pledges. This is when the advisory network of influential people is critical, who can use Growing Up in Cities as a means to press authorities to honor their promises.

Finally, some of the children's priorities require external support. In this case too, the project network proves invaluable, especially as it involves international as well as national contacts. For example, in the Johannesburg squatter camp and in a Bangalore slum, young people expressed their need for a children's center where they could gather to study, learn a trade, or play. Through project contacts, a Norwegian children's fund helped them realize this dream. In the South African site that brought together suburban and inner-city youth, the Junior Council raised money for their inner-city peers by painting a mural-size picture of their city, cutting it into squares, and then selling the pieces off during a Saturday morning at a mall.

An example of a successful government response comes from Frankston, Australia. A city councilor there heard a national radio program about the first Growing Up in Cities site in Australia, and subsequently called the project's Asia-Pacific director to ask her to bring the project to Frankston. With the help of two graduate students, she engaged eight to 18 year olds in eight Frankston neighborhoods in investigating safety issues for young people in the city. The young people's recommendations were integrated throughout the Safety Management Plan that the city prepared to guide its policy on this issue. In other words, rather than segregating young people's ideas into a separate "for children only" section, the City Council recognized the relevance of their recommendations for the population at large. In addition, the City Council established a Youth Safety Management Team with a staffed facilitator so that young people could remain engaged in implementing recommendations that were specific to their interests, such as the creation of a skate park (Chawla and Malone 2003).

Even when a city government commissions the project, however, that is no guarantee of success. Inspired by the project in the squatter camp, the Greater Johannesburg Metropolitan Council commissioned four Growing Up in Cities sites in disadvantaged areas of the city that were slated for renovation, in order to know how to most effectively invest renovation funds to address children's needs. At each site, children put their heart into documenting their lives and recommendations and planned a presentation for city officials. Then the official responsible for carrying the children's ideas forward put the resulting report on a shelf. Three years

later, when Save the Children Sweden sought to discover what had come from the project, their investigator found that the answer was nothing. She managed to locate a number of children who had been involved, and they were understandably disillusioned. As one young participant said, "Don't start these projects if you don't intend to finish them. To do that is crazy. It's like cutting out a dress and you won't be able to sew it" (Clements 2003).

At the same time, the children showed surprise and appreciation that their ideas mattered enough for Save the Children to track them down, and they were encouraged to learn that their recommendations to improve city quality had been posted on the web and published in an international journal, so that people elsewhere in the world could learn from their work (Kruger and Chawla 2002). As a consequence of the investigation, their work has been brought to the attention of the new city administration and it may yet bear fruit. This story suggests that, from the beginning, projects need to be planned with a schedule for action and funding for follow-up evaluations to hold city officials to their words.

Research on children's political socialization indicates that opportunities to engage in political action in adolescence and youth and to see these efforts make a difference can have a long-term effect (Chawla, in press). Young people are most likely to see this connection in projects in their local community. One of the great advantages of participatory projects for environmental change, such as Growing Up in Cities, is that young people see visible evidence of their actions. They can gather to study or play in the children's center that they have recommended and helped design, or use the plaza that they helped restore. The project's purpose is not only to improve the quality of children's lives here and now, but also to assemble networks that can continue to work for better urban environments—including representatives of the city's youngest citizens—and to empower a new generation of activists.

Overwhelmingly, young people's ideas from Growing Up in Cities sites around the world emphasize the importance of social capital rather than the increased consumption of natural resources. Even where young people face severe deprivations, their material ambitions are for the basic necessities of human dignity: adequate food and clean water for health, sanitation, electricity, a secure place to live, education, jobs when they finish school. Equity, which would provide these necessities for all, is one of the essential goals of sustainable development. Beyond these necessities, young people speak of other needs: to feel valued and integrated into their society; to feel safe; to be able to move about their neighborhood freely; to have places where they can gather with friends and find interesting activities to share. At some of the sites in the developing world that offered these advantages, they speak about their lives with greater satisfaction than their peers in the developed world who live in places that offer a much higher relative standard of living but shunt low-income youth aside into areas where they feel excluded, fearful of crime, and excruciatingly bored. If city leaders and other citizens followed the original vision behind the Growing Up in Cities project and focused on "the creation of favourable social relationships in a human environment, the prevention of alienation and attention to social and mental health on the community scale" (UNESCO 1970), and enlisted young people as partners in this venture--rather than measuring well-being primarily in terms of more and more material consumption--they would find themselves embarked on an effective course to sustainability.

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Louisville unveils 'City of Parks' vision; Thousands of acres, 100-mile trail to build on Olmsted Heritage

Mike Heitz, Director, Metro Parks

Jodi Hamilton, Assistant Director, Metro Parks

Louisville Metro Parks, which manages 122 municipal parks and a variety of recreation programs, is embarking on an ambitious long-range plan to ensure that all of the city's 700,000 citizens have access to quality parks and recreation opportunities. Using the city's nationally-renowned Olmsted Parks as a model, the community is acting boldly – through a public-private partnership – to acquire and hold land for future development into park land while it's still available.

On February 22, Louisville Mayor Jerry Abramson announced a $20 million initiative that will make Louisville Metro a "City of Parks." Abramson announced a far-reaching "greenprint" for Louisville, a multi-year vision that includes the addition of at least 2,000 acres of park land in the Floyds Fork watershed, continued expansion of Jefferson Memorial Forest, a hiking trail around the Louisville Metro perimeter, and a major upgrade of the city's existing parks. It will be the largest expansion of the community's park system since the expansion of Jefferson Memorial Forest in the 1970s. Thanks to major contributions from Humana Inc. co-founder and chairman David A. Jones, his family and others, a significant portion of the land needed for the expansion already has been acquired. Jones will lead a fundraising effort to continue buying land.

Already known nationally for the majesty of its public parks, Louisville Metro is embarking on a new park land project as ambitious and grand as what came before, Abramson said. "A century ago, world-renowned landscape architect Frederick Law Olmsted laid out his plans for Louisville's first park system, a superb network of green spaces linked together by tree-lined parkways that became one of his greatest achievements," he said. Mr. Olmsted's excellent parks continue to serve as a major asset in our city's quality of life. Now the time has come for us to revisit that tradition of excellence and extend his great vision to all parts of our community. Residential growth continues strong in the Floyds Fork area. We have a window of opportunity to preserve land there for our children and for generations to come. "At the same time we must also live up to the legacy Mr. Olmsted created by making our existing parks the very best they can be." Abramson emphasized that the "City of Parks" initiative will take years to complete.

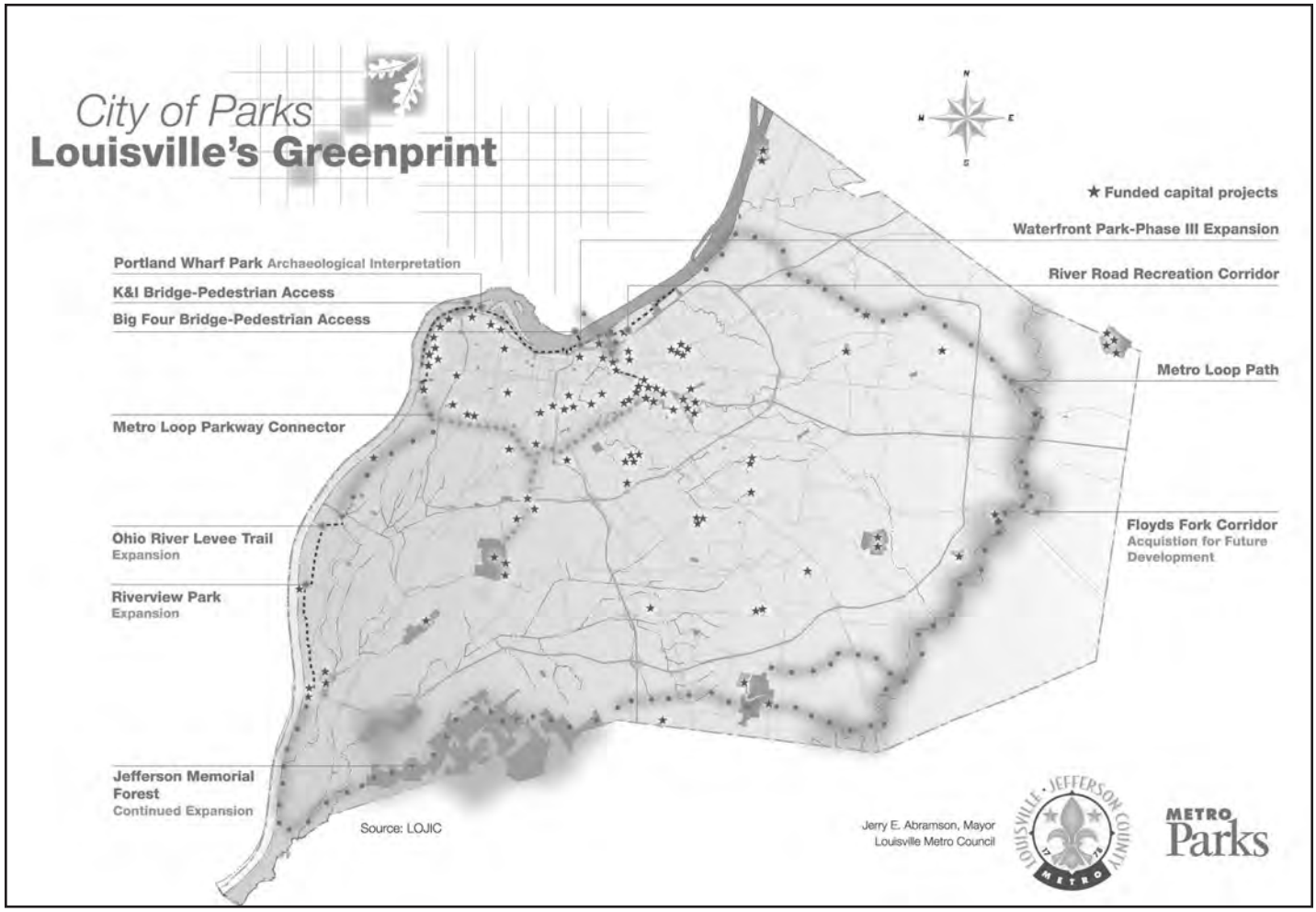
Denise Schlener, Director of the Trust for Public Land's Chesapeake and Central Appalachians Field Office, praised Louisville for being more aggressive than other U.S. cities in improving its parks. "The path-breaking land conservation efforts announced today put Louisville in a league of its own nationally," she said. "As Louisville did a century ago when Frederick Law Olmsted was asked to design a world-class park system for a growing population, today's leaders are acting now to ensure that future generations will have parks, streams, and forests to enjoy forever."

The Trust for Public Land, a national nonprofit land-conservation organization, has been instrumental to the initiative, helping negotiate deals with landowners on behalf of Metro Parks in both the Floyds Fork corridor and the Forest.

Left to Right: Metro Parks Senior Engineer Jerry Brown, Humana Founder David Jones, Metro Parks Director Mike Heitz, Louisville Major Jerry Abramson. Metro Parks Senior Planner Lisa Hite (back to camera)

Jones leads partnership to raise funds

The mayor praised Jones' leadership in developing a public-private partnership, greatly reducing the project's reliance on public funds. "We could not have begun this important journey without the generosity and deep personal commitment of David Jones, his son Dan, and the rest of the Jones family," the mayor said. "We also appreciate and respect



The visionary map of the ten year parks development project.

the foresight and community-mindedness of Dr. Steve Henry," Abramson said, referring to the former lieutenant governor and Jefferson County commissioner who helped create a land-conservation foundation, Future Fund, buying hundreds of acres along Floyds Fork in the 1990s. David Jones and his family have committed $5 million to the "City of Parks" effort. They consider this an opportunity to do for 21st century Louisville what Olmsted parks did for the 20th century. Jones has also committed to raising another $15 million from a variety of private and public sources.

A dramatic waterfall on the Floyds Fork corridor.

Abramson also announced that the James Graham Brown Foundation recently made a commitment to this effort in the amount of $3 million. And Sara Shallenberger Brown has made a $1 million gift to the project. The mayor said he will propose $1 million to $2 million in the Louisville Metro budget for each of the next few years. The public will have a chance to pitch in too. A non-profit organization, 21st Century Parks, has been formed and is seeking federal 501(c)(3) status in order to accept tax-deductible donations. In the interim, the Louisville Olmsted Parks Conservancy will accept donations.

Effort includes park upgrades, new parks, loop trail

Besides adding new park land, Metro Parks Director Mike Heitz said Louisville Metro is investing in its existing parks as well. "Since merger took place in January 2003, Metro Parks has completed 67 construction and enhancement projects totaling more than $16 million, including a major restoration of the Iroquois Amphitheater, upgrades of Shawnee Park's 'Dirt Bowl' basketball courts, improvements

Paved trail in the Metro parks system.

to Sun Valley Park's soccer fields, and new playgrounds in several parks, such as Charlie Vettiner Park and Riverview Park," he said. More than 100 additional projects are planned or already under way in parks all over town. In the Floyds Fork corridor, nearly 2,000 acres have been acquired or put under option, with more to come. The corridor will include several major "nodes" for future parks, linked by additional green space. The City of Parks plan includes a hiking and bicycling trail that will eventually form a loop around the entire county -- 100 miles or more in length -- and connect the Olmsted parks along existing parkways.

Mayor Abramson said many of the concepts contained in the "City of Parks" initiative were envisioned in Cornerstone 2020, the comprehensive land-use plan adopted in 2000. Louisville and Jefferson County were projected to need over 8,800 acres of new park land by the year 2020. The subsequent merger of city and county governments helped make the project feasible, he said. "A little over two years ago we united our government, and the greenprint we present today will unite our neighborhoods and our people, with a trail that will help connect all parts of our community," Abramson said. "Parks draw people together who might not otherwise encounter one another, bridging the gaps between city and suburb, between rich and poor, between white and black. Parks raise property values and make our community more attractive to new residents, businesses and visitors. Parks preserve irreplaceable landscapes. Parks give our kids a place to play, and they allow each of us to take a break from the daily hustle and bustle."

Many details about the "City of Parks" effort have yet to be determined, such as the specific uses of any new land and the extent and timing of the expansion of Jefferson Memorial Forest. Abramson said the public will have a chance to give its input at future meetings. But while the project may take as many as 15 years to complete, he said, he wanted to announce the effort now, in order to build community support and involvement.

David Jones said he got involved because Louisville is his hometown, and he believes in the lasting value of a well-planned park system. "By acting now," he said, "we can acquire and preserve land along the Floyds Fork corridor and at the same time encourage adjacent development that is in keeping with the vibrant Olmsted park neighborhoods. If we don't act now, we will lose this wonderful opportunity." Dr. Henry said: "Growth is fundamentally changing the character of our community. Future Fund is dedicated to green spaces and good planning. I support development but I want it to happen in a way that protects what green spaces we have left. Land set aside for parks and open spaces is the smart way to grow our city. I truly appreciate the many people who have supported our efforts over the years, especially Mr. Jones and his family. I want to especially thank Mary Bingham, a special lady who believed in this project from the beginning."

For more information on Louisville's City of Parks initiative, call 502/574-1500 or visit www.metro-parks.org

Jody Hamilton, Assistant Director of Metro Parks, passed away on Wednesday, May 4, 2005. She leaves a strong legacy through her work in parks and recreation and will be sorely missed.